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JOURNAL OF EDUCATIONAL RESEARCH

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THE EFFECTS OF PREMATURE DRILL IN THIRD-GRADE ARITHMETIC

THROUGH error, five important charts were omitted from the article "The Effects of Premature Drill in Third-Grade Arithmetic" by William A. Brownell and Charlotte B. Chazal. This article appeared on pages 17-28 of the September, 1935, issue of this journal.

Rather than to run the article again, this time accompanied by the charts, the charts themselves are printed herewith. The assumption is that the reader who read the article in the September, 1935, issue of this magazine will have no trouble in putting the charts into their correct context, and those who did not read the article but become curious about the charts will be stimulated to consult the article proper. In this way, the report of the investigation may actually gain a larger number of readers than would have been the case had no omission been committed.

CHART I

Responses to particular combinations from Interview I (at left, below), to Interview II (middle) and Interview III (at right)							
Counting	116	Counting	69	Counting	60	Guessing	1
				Indir. Sol'n	1	Immed. Recall	7
		Indir. Sol'n	16	Counting	6	Guessing	0
				Indir. Sol'n	5	Immed. Recall	5
		Guessing	7	Counting	4	Guessing	1
				Indir. Sol'n	0	Immed. Recall	2
		Immed. Recall	24	Counting	9	Guessing	0
				Indir. Sol'n	3	Immed. Recall	12
Indir. Sol'n	72	Counting	4	Counting	2	Guessing	0
				Indir. Sol'n	1	Immed. Recall	1
		Indir. Sol'n	36	Counting	0	Guessing	2
				Indir. Sol'n	22	Immed. Recall	12
		Guessing	3	Counting	0	Guessing	0
				Indir. Sol'n	1	Immed. Recall	2
		Immed. Recall	29	Counting	1	Guessing	2
				Indir. Sol'n	1	Immed. Recall	25
Guessing	122	Counting	5	Counting	2	Guessing	0
				Indir. Sol'n	2	Immed. Recall	1
		Indir. Sol'n	6	Counting	0	Guessing	1
				Indir. Sol'n	3	Immed. Recall	2
		Guessing	69	Counting	3	Guessing	50
				Indir. Sol'n	4	Immed. Recall	12
		Immed. Recall	42	Counting	0	Guessing	5
				Indir. Sol'n	7	Immed. Recall	30
Immed. Recall	202	Counting	11	Counting	7	Guessing	0
				Indir. Sol'n	1	Immed. Recall	3
		Indir. Sol'n	22	Counting	2	Guessing	4
				Indir. Sol'n	4	Immed. Recall	12
		Guessing	14	Counting	2	Guessing	4
				Indir. Sol'n	1	Immed. Recall	7
		Immed. Recall	155	Counting	1	Guessing	9
				Indir. Sol'n	9	Immed. Recall	136

CHART II

A Counter

A girl, age 10 years, 10 months
Mark in arithmetic in Grade II, C+; in first month of Grade III, C.

DATA ON GROUP TESTS

	A	B	C
Time,—min.	24	8	7
No. errors	55	17	14

	Interview I	Interview II	Interview III
8 + 9 =	8 and 9,—9 and 1 is 10; put down 8 more,—would be, let me see,—would be 10, 11, 12, 13, 14, 15, 16, 17, 18 (Counted out loud)	9 and 8,—let's see, 9 and 8 makes—9, 10, 11, 12, 13, 14, 15, 16, 17 (Counted out loud on fingers)	Same* (17)
6 + 9 =	6 and 9—9, is 10 and 6— 11, 12, 13, 14 (Counted out loud)	6,—9 and 6 is,—let me see. 9 and 6 make 9, 10, 11, 12, 13,(On fingers, aloud)	Same (14)
7 + 9 =	7 and 9— 9 is 10—4, 5,—no, I'm counting wrong: 11, 12, 13, 14, 15, 16 (Counted aloud)	9 and 7 is 14	9 and 7,—9, 10, 11, 12, 13, 14, 15, 16 (Aloud, on fingers)
7 + 8 =	8, 9, 10, 11, 12, 13, 14, 15 (Counted aloud)	Same,* on fingers (15)	Same (15)
3 + 4 =	4, 5, 6, 7, 8, 9 (Counted aloud)	4 and 3 are 6,—no, 7	4 and 3 are 6,—I mean 7 (Counted silently to correct)
9 + 8 =	9 and 10,—I mean 9 and 8 would be — — — (Gave up)	8 and 9 are,—8, 9, 10, (again) 8, 9, 10, 11, 12, 13, 14, 15 (Aloud, on fingers)	Same (17)
4 + 2 =	Put 4 and add 2 more—would be 6	Same (6)	Same (6)
8 + 7 =	8 and 7; 7, put 8 on to it,—would be 8, 9, 10, 11, 12, 13— I think it is 11 (Counted aloud)	8 and 7; put down 7 and 8,—9, 10, 11, 12, 13, 14. (Aloud on fingers)	Same (15)
3 + 6 =	3 and 6 are— —; 6 and 3 are 9	6 and 3,—put down 6 and carry 3,—would be 8	6, 7, 8, 9 (Aloud on fingers)
9 + 7 =	7, put 8 on to it,—then put 9 on to it,—would be 9, 10, 11, 12 (Counted aloud)	7 and 9 are,—9, 10, 11, 12, 13, 14, 15 (Aloud, on fingers)	Same (16)
2 + 8 =	2 and 8; 8 and 2 more is 10	8 and 2; put down 8 and carry 2; 10	8 and 2 are 10
6 + 7 =	6 and 7 would be,—8 and 6 on it would be 8, 9, 10, 11, 12	7, 8, 9, 10, 11, 12, 13 (Counted aloud, on fingers)	7 and 6,—7,—7, 8, 9, 10, 11, 12, 13 (Aloud, on fingers)
4 + 5 =	4 and 5,—5 would be 6 and add 4 more; would be 7, 8, 9, 10 (Counted aloud)	5 and 4,—I mean, 4 and 5,—5, 6, 7, 8, 9, 10 (Aloud, on fingers)	Same (9)
5 + 6 =	5 and 6 would be,—6 would be 7; add 5, would be 7, 8, 9, 10, 11(Counted aloud)	6 and 5, — — — — 11 (May have counted)	6 and 5,—5,—6, 7, 8, 9, 10 (Aloud on fingers)
8 + 3 =	8 and put 3,—would be— 8 would be 9, — —, 9, 10, 11, 12 (Counted aloud)	8 and 3,— 9, 10, 11 (Counted aloud, on fingers)	Same (11)
6 + 8 =	6 and 8,—8 would 9, add 6 more; would be 10, 11, 12, 13, 14, 15, 16 (Counted aloud)	8 and 6 are,— 6, 7, 8, 9, 10, 11 (Aloud on fingers)	Same (14)

*"Same" means, same response as at left.
Numbers in parentheses are the answers.

CHART IV

A Cipherer

CHART III

A Child who Employed Indirect Solution

A boy, age 9 years.
Mark in arithmetic in Grade II, C+; in first month of Grade III, C.

DATA ON GROUP TESTS

	A	B	C
Time,—min.	30	22	11
No. errors	61	35	13

	Interview I	Interview II	Interview III
8 + 9 =	8 and 9 are,—let's see, 8 and 8 are 16, and 9 and 9 are 18, so it's 1 behind,— 17	8 9's,—no, 9 8's are,— 9 and 9 is,— 8 and 8,—put 1 more with it, would be 19	9 and 9 is 16
6 + 9 =	6 and 9,— I was thinking that 5 and 9 is 14, so 6 and 9 is 1 more,—it's 15	(Solution too involved to report in this space) (16)	9 and 6 are,— 9 and 8 would be— 9 and 6,— let me see,— 14
7 + 9 =	7 and 9 would be,—7 and 7 are 14,— just 2 more, so it's 15, 16	9 7's would be just 1 more,— 17 (Derived sum from above)	7 and,— 9 and 7 is 14,— no, 16, no, 15, because 9 and 8 is 16
7 + 8 =	7 and 8,—it's 17; no, it can't be. 7 and 8 more,—7 and 8,— 8 and 8 is 16, 7 and 7 is 14, then 7 and 8 are 15	8 7's would be 16,—one down from 9 7's (See the solution above)	8 and 7 is 15
3 + 4 =	3 and 4 are 7	3 4's would be 12	3 and 4 are 7
9 + 8 =	9 and 8 are,— 9 and 9 is 18; 9 and 8 is 17. No, it can't be 17. 8 and 8 is 16; 8 and 9 is 17. It is 17.	9 and 9 would be 18, and 1 more would be 17,— no, 19	9 and 8 is 16, just like (See solution for first comb. above) 8 + 9 =
4 + 2 =	2 and 4 are 6	2 and 2 more would be 4, and 2 more, —6	2 and 4 are 6
8 + 7 =	8 and 7,— is,— 7 and 7 is 14, and 1 more is 15	Same (15)	7 and 8 are 15
3 + 6 =	3 and 6 is,— 9; 3 and 3 would be 6, and 3 more would be 9	3 6's,— 2 6's are 12; one would be 18	3 and 6 are 9
9 + 7 =	9 and 7,— 7 and 7 is 14. 9 and 9 is 18, so 9 and 7 would be 19	2 7's would be 14,— 15, 16	7 and 9 would be 16,—I mean 15, because 9 and 8 is 16; one down is 15
2 + 8 =	2 and 8,— 8 and 2,— 2 and 2 is 4, and 6 would be 10	2 8's are 16	2 and 8 are 10
6 + 7 =	6 and 7,— 6 and 6 would be 12, and 1 more would be 13	7 and 6 is,— 6 and 6 is 12; 2 7's are 14; carry 1 back, 13	7 and 6 is 15
4 + 5 =	9 and 5,—I mean, 4 and 5 are 9	4 5's are 20. I put a one (Wrote 120, then erased the 1)	4 and 5 are 9
5 + 6 =	5 and 6,— 5 and 4 would be 9 (see above). It would be 2 more, so it would be 12	(Solution too complicated to report here) (32)	6 and 5 are 11
8 + 3 =	8 and 3 are 11	8 3's are,— 2 3's are 6; 8 and 8 would be 16, and 3 more would be 18,—no, 20	3 and 8,—let's see; 8 and 3 would be— 8 and 2 are 10,— 11
6 + 8 =	6 and 8,— 8 and 6,—let me see,— 8 and 2 would be,— 8 and 1 are 9; 8 and 2 are 10; 8 and 4 would be 14, and 2 more would be 16	8 6's,— 8 and 8 are 16. 6 and 6 would be 12. 8 6's,— 6 and 6 are 12; 8 and 8 are 16 and 6 more would be 17, 18, 19, 20, 21	8 and 6 is 15,—no, 14; 8 and 7 is 15, so 8 and 6 would be 14

"Same" means same responce as at left. Nos. in ( ) are the answers.

CHART IV

A Guesser

A girl, age 8 years.
Mark in arithmetic in Grade II, C+;
in first month of Grade III, C.

DATA ON GROUP TESTS

	A	B	C
Time,—min.	23	5	6.5
No. errors	60	44	50

Interview I	Interview II	Interview III
8 and 9 are 14	8 and 9 are 21	9 and 8 are 36 (Wrote as at right; said "4 1's are 5; no, 4 and 1 are 15")
6 and 9 are 18	6 and 9 are 15	9 and 6 are 15
7 and 9 are 17; 9,—let's see,—it's 12 (Wrote as at right, —then 5 said, "5 and 5 are 6." No use of fact 5)	7 and 9 are 12	9 and 7 are 32
7 and 8 are 9	7 and 8 are 13	7,—8 and 7 are 12
3 and 4 are 6	3 and 4 are 15	4 and 3 are 20
8 and,—I mean, 9 and 8 are 12	9 and 8 are 16	8 and 9 are 32
4 and 2 are 5	4 and 2 are 8	2 and 4 are 8
8 and 7 are 9	7 and,—8 and 7 are 19	7 and 8 are 9
3 and 6 are 8	3 and 6 are 11	6 and 3 are 27
9 and 7 are 4	9 and 7 are 13	7 and 9 are 28
2 and 8 are 9	2 and 8 are 16	8 and 2 are 16
6 and 7 are 8	6 and 7 are 18	7 and 6 are 24
4 and 5 are 9	4 and 5 are 20	5 and 4 are 32
5 and 6 are 8	5 and 6 are 12	6 and 5 are 35
8 and 3 are 9	8 and 3 are 11	3 and 8 are 11
6 and 8 are 12	6 and 8 are 21	8 and 6 are 12

CHART V

A Child who Knew the Combinations at the Beginning of Grade III (Immediate Recall)

A boy, age 8 years.
Mark in arithmetic in Grade II, A;
in first month of Grade III, A.

DATA ON GROUP TESTS

	A	B	C
Time,—min.	15	10	8
No. errors	0	0	0

Interview I	Interview II	Interview III
8 and 9 are 17	9 and 8 are 17	Same (17)
9 and 6 are 15	6's,—I mean 9 and 6 are 15	9 and 6 are 15
7 and 9 are 16	9 and 7 are 16	7 and 9 is 18,—I mean 16
7 and 8 are 15	8 and 7 are 15	7 and 8 are 15
3 and 4 are 7	4 and 3 are 7	3 and 4 are 7
9 and 8 are 17	Same (17)	Same (17)
4 and 2 are 6	Same (6)	Same (6)
8 and 5 (note) are 15	8 and 7 are 15	7 and 8 are 15
6 and 3 are 9	Same (9)	Same (9)
9 and 7 are 16	Same (16)	9 and 7 is 13,—no, 16
8 and 2 are 10	Same (10)	Same (10)
6 and 7 are 13	7 and 6 are 13	6 and 7 are 13
4 and 5 is 9,—I mean 10	5 and 4 is 9	5 and 4 are 9,—10,—no, 9, because 6 and 4 is 10; then 5 and 4 is 9
5 and 6 is 11	6 and 5 are 11	5 and 6 is 13,—no, 11
8 and 3 is 11	8 and 3 is 10,—no, 11	8 and 3 is 11
6 and 8 are 14	8 and 6 are 14	8 and 6 is 13,—no, 17; no, 14. (and 7 is 13, then 6 and 8 is 14

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INTRODUCTORY COURSES IN EDUCATION

WILLIAM H. BURTON AND DALMYRA M. IBANEZ
University of Southern California

THE typical approach to education was for years through courses in the history or philosophy of education. There arose about 1910 introductory or orientation courses in education, designed to give a unified view of the entire field and to prepare for specialized courses to come. These courses were also open to, and often taken by students not intending to teach, thus serving as general liberal courses for citizens in general.

An introductory course of this nature is now given in most teacher training institutions, but opinion is not unanimous. As an illustration of arguments advanced against this course we may note the well written argument of Mr. C. R. Maxwell,[1] who makes four points:

1. Introductory courses do not give an overview, but merely fragments of future work.
2. Prospective teachers do not need a general survey or orientation as do all students in the humanities and sciences. As professional students they have chosen the field of education and do not need introduction to it.
3. Introductory courses overlap seriously with later courses thus killing interest.
4. Introductory courses must of necessity be sketchy and theoretical, whereas training should be as practical as possible.

There is clearly some truth in these points but at the moment the majority of teacher training institutions reject them. It is replied that introductory courses need not be fragmentary or theoretical and that they can be so organized as to give a coherent overview. Objective studies of overlap are contradictory among themselves, showing either that the method of investigation is not fully refined, or that overlap exists in some institutions and not in others. The latter is probably true. It is quite obvious that in some institutions the introductory course does kill interest in later

[1] Maxwell, C. R. "Orientation Courses in Education," *Elementary School Journal*, XXXII (March, 1932), pp. 521-524.

specialized courses; in others it decidedly stimulated interest in advanced, technical courses. It may be that the skill of the instructors and not the content in both types of course is the crux.

Textbooks for the Introductory Course.—In 1918, there appeared the first text for such a course.[2] A score are now in use. These books vary greatly in scope, core of organization, and method of approach. The following list is arranged chronologically, and if any title is omitted it is pure inadvertence as effort was made to include all books in use.

1918 Judd, C. H. *An Introduction to the Scientific Study of Education*, Boston: Ginn & Co.

1920 Strayer, G. D., and Engelhardt, N. L. *The Classroom Teacher at Work in American Schools*, New York: American Book Co.

1924 Frasier, G. W., and Armentrout, W. D. *An Introduction to Education*, Chicago: Scott, Foresman & Co., (Revised 1927 and 1933).

1925 Cubberley, E. P. *An Introduction to the Study of Education*, Boston: Houghton Mifflin Co. (Revised 1933).

Dearborn, N. H. *An Introduction to Education*. New York: D. Appleton & Co.

Heinmiller, L. E. *A First Book in Education*, New York: The Century Co.

Bagley, Wm. C., and Kieth, J. A. H. *An Introduction to Teaching*, New York: The Macmillan Co. (No other books making *teaching* the keynote are included here though several are available.)

1926 Horn, J. L. *The American Public School*, New York: The Century Co.

1927 Brubacher, A. R. *Teaching: Profession and Practice*, New York: The Century Co.

First Revision of Frasier and Armentrout above.

1928 Grizzell, E. M. *Education: Principles and Practice*, New York: The Macmillan Co.

Almack, J. S., and Lang, A. R. *The Beginning Teacher*, Boston: Houghton Mifflin Co.

1929 Clapp, F. L., Chase, W. J., and Merriman, Curtis. *Introduction to Education*, Boston: Ginn & Co.

Thorndike, E. L., and Gates, A. I. *Elementary Principles of Education*, New York: The Macmillan Co.

1930 Jordan, R. H. *Education as a Life Work*, New York: The Century Co.

1932 Adams, J. E., and Taylor, W. E. *An Introduction to Education and the Teaching Process*, New York: The Macmillan Co.

[2] Two new books have appeared since this article was written and are not considered here:

Douglass, A. A. *The American School System*, Farrar & Rinehardt, 1934.

Burton, W. H. *Introduction to Education*, New York: D. Appleton-Century Company, 1934.

Schutte, T. H. editor with twenty-three contributors, *Orientation in Education*, New York: The Macmillan Co.

Blackhurst, J. H. *Introducing Education*, New York: Longmans Green & Co.,

1933 Butterweck, J. S., and Seegers, J. C. *An Orientation Course in Education*, Boston: Houghton Mifflin Co.

First revision of Cubberley above.

Second revision of Frasier & Armentrout above.

In addition to these texts numerous local syllabi are available with just about the same titles and variation of content.

The Stated Aims of Introductory Courses.—Practically every volume states explicitly (and the others clearly indicate) that the material (1) is for beginning students, (2) is for experienced teachers in service, and (3) is of an introductory nature designed to acquaint the student with the aim and structure of American education. It would seem difficult to organize material for both beginners and experienced teachers in the same volume but a few volumes seem to have done this in part rather well.

Granted this unanimity of aim, a number of questions immediately appear:

1. Is there agreement on a general approach through which students may be introduced to education?
2. Is there a plan of organization consistently following the indicated approach and relating the introductory course to other courses to follow?
3. Is there agreement upon the major topics to be included in the total treatment?
4. Is there agreement on the relative importance of the topics included?
5. Are any trends to be noted, either in content or method of organization?

The first two questions may be answered through inspection of the books, the latter three by means of statistical analysis of content.

The Method of Approach.—At least five general methods of approach are found. Striking differences in organization and emphasis appear due to the dominant interests of the authors. Professor Judd as one of the leaders of the scientific method in education naturally stresses the experimental and statistical attack upon problems. Since this attitude makes prominent the evolutionary nature of educational institutions and processes, less attention is given to description. Dr. Cubberley, for years an authority upon school administration and history of education, gives much more space to these aspects than does any other author. Drs. Frasier and Armentrout, being engaged in teacher training, open with a

TABLE I

DISTRIBUTION OF CONTENTS IN SEVENTEEN INTRODUCTORY TEXTS

Topics	BOOKS A		B		C		D		E		F		G	
	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent
I. AIMS, OBJECTIVES, OUTCOMES			15	4									15	5
1. Educational Objectives													15	5
2. Aims of Education														
3. Outcomes of Education			15	4										
II. COMPARATIVE EDUCATION	18	5												
1. Comparison of Schools and Philosophies of Various Countries and Times	18	5												
2. Schools of England, France, Germany														
3. Training of Teachers in England, France, Germany														
III. PHILOSOPHY OF EDUCATION	13	4	12	4	23	11	31	9	15	4	24	5	36	16
1. Philosophy of Education									15	4	24	5	36	13
2. The Teachers Philosophy					11	5	17	5					9	3
3. Democracy and Education	13	4	12	4	12	6	14	4						
IV. HISTORY OF EDUCATION					23	11	46	14	20	5	21	5		
1. European Background					1		1							
2. Origin and Development of American Schools					8	4	27	8	20	5	21	5		
3. Biographies of Educators					14	7	18	5						
V. SCIENCE OF EDUCATION	41	13	12	4					20	5	20	4	11	4
1. The Scientific Movement	4	1											11	4
2. Description of Scientific Studies	12	4							20	5	20	4		
3. Scope and Methods of Scientific Study in Education	8	2												
4. Measurement in Education	17	5												
5. Research in Education														
6. Educational Statistics			12	4										
7. School Surveys														
VI. EDUCATIONAL PSYCHOLOGY					24	11	30	9					28	10
1. Educational Psychology													28	10
2. Original Nature					12	6	16	5						
3. Individual Differences As Such														
4. Individual Differences as Influencing the Curriculum														
5. Laws of Learning					12	6	14	4						
VII. EDUCATIONAL SYSTEM: DESCRIPTION OF	36	11	34	10	54	26	96	29	95	23	137	30	23	8
1. Description of Schools by Levels					18	9	37	11	50	12	47	10	23	8
2. Reorganization of System					21	10	36	11	12	3	11	2		
3. Expansion of System														
a. Special Classes											27	6		
b. New Lines of Effort	36	11	34	10	15	7	23	7	17	4	35	8		
c. Vocational and Educational Guidance									6	1	6	1		
d. Adult and Extension									10	2	11	2		

Topics	BOOKS																			
	H		I		J		K		L		M		N		O		P		Q	
	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent
I.	19	10					17	6			55	18	15	3					20	6
1.													15	3					20	6
2.	4	2					17	6			55	18								
3.	15	8																		1
II.									67	14									4	1
1.																			4	1
2.									39	8										
3.									28	6										
III.			24	7	26	7	12	4					17	3	19	4			37	12
1.			24	7									17	3	19	4			37	12
2.					26	7	12	4												
IV.					46	11	36	12	105	23			24	5	44	9	25	8	23	7
1.					21	5	16	5	38	8					27	6			23	7
2.					25	6	20	7	67	14					17	3	25	8		
3.													24	5						
V.					20	5			28	6			35	7	83	17	29	10	27	9
1.					20	5			3	1									27	9
2.									7	2										
3.																				
4.									12	3			18	4	27	6	29	10		
5.													17	3	18	4				
6.									6	1					27	6				
7.															11	2				
VI.			49	14							37	12			31	6	35	12		
1.			32	9											31	6	35	12		
2.			17	5							21	7								
3.																				
4.											16	5								
5.																				
VII.			12	3	143	37	16	5	49	11	40	13	81	15	175	36	44	15	33	10
1.			12	3	68	18	16	5			21	7	5	1	89	18	44	15	17	5
2.					52	13														
3.																				
a.					23	6									19	4			16	5
b									17	4			76	14	20	4				
c.																				
d.									32	7	19	6			27	6				
															20	4				

TABLE I *(Continued)*

DISTRIBUTION OF CONTENTS IN SEVENTEEN INTRODUCTORY TEXTS

Topics	BOOKS A		B		C		D		E		F		G	
	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent
VIII. EDUCATIONAL SYSTEM: ADMINISTRATION AND SUPERVISION	69	21	139	42	17	7	20	6	132	31	121	27	2	1
1. Organization for Administration	15	5	15	4	16	7	18	5	47	11	32	7		
2. Finance	17	5							50	12	54	12	2	1
3. Supervision	9	3	18	5					18	4	18	4		
4. School Plant	17	5	34	10	1		2		17	4	17	4		
5. Administration of Pupil Population	11	3	72	22										
IX. CURRICULUM	93	29	22	7					12	3	14	3	26	9
1. Principles of Curriculum Organization	67	21											15	5
2. Curriculum Reorganization	26	8							12	3	14	3		
3. Selection of Subject Matter													11	4
4. Extra-Curriculum			22	7										
X. THE PUPIL	12	4	14	4					40	10	41	9		
1. School Population, Description of														
2. Child Study	12	4							40	10	41	9		
3. Individual Differences			14	4										
XI. THE EDUCATIONAL PROCESS	31	9	71	22	55	26	73	22	35	8	37	8	51	18
1. Principles of Teaching					15	7	21	6						
2. Learning Process			10	3					17	4	18	4		
3. Methods, General	20	6	16	5	26	12	30	9	18	4	19	4	15	5
4. Classroom Management	11	3	22	7									36	13
5. Discipline														
6. Measuring Achievements			23	7	14	7	22	7						
XII. THE TEACHER					16	8	21	6	19	4	5	1	16	6
1. Personal Qualifications														
XIII. EDUCATION AS A PROFESSION	10	3	7	2			11	3					56	21
1. General Analyses of Teaching													35	13
2. General Analyses of the Profession of Education			7	2			4	1						
3. Occupational Guidance							7	2					10	4
4. Professional Training	10	3											11	4
5. Certification														
6. Securing a Position														
XIV. EDUCATIONAL SOCIOLOGY									32	8	30	7	8	3
XV. EDUCATIONAL ORGANIZATIONS			2				3	1						
Total	323	99	326	99	212	100	331	99	420	101	450	99	281	101
Total topics	18		16		16		19		18		19		16	
Major topics only	9		10		7		9		10		10		11	

a. The books are not tabulated in alphabetical or chronological order.
b. Four of the twenty-one volumes listed are omitted from this table.
c. The page totals are for text only, omitting questions and bibliography.
d. Figures opposite major heads are totals of the sub heads.

Topics	BOOKS																			
	H		I		J		K		L		M		N		O		P		Q	
	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent	No. of pages	Per cent
VIII.			11	2	51	13	80	27	80	17			103	20	62	13	13	4	30	9
1.					51	13	21	7	39	8									14	4
2.			3				24	8	31	7			38	7	24	5			14	4
3.			8	2			16	5	10	2			19	4	26	5	13	4		
4.							19	6					25	5	12	2			2	1
5.													21	4						
IX.	13	65	92	26	24	6	39	13			46	15	34	7	13	3	12	4	12	4
1.					24	6	10	3					21	4					12	4
2.							29	10												
3.			92	26							46	15	13	2			12	4		
4.	13	65													13	3				
X.	28	14	12	3			25	8	29	6			21	4					20	6
1.			12	3			19	6											20	6
2.	16	8					6	2												
3.	12	5							29	6			21	4						
XI.	129	65	77	21	19	5	16	5	54	12	130	42	89	17	18	4	61	20	59	19
1.							4	1			53	17			18	4			16	5
2.							5	2	25	5	21	7	23	5			15	5	15	5
3.	33	16	77	21	19	5	7	2	29	6	35	11	45	9			46	15	28	9
4.	29	15											3							
5.	41	22											18	3						
6.	26	13									21	7								
XII.			40	12									28	6					7	2
1.																				
XIII.	11	5	37	12	38	10			53	11			15	3	40	8	47	16	13	4
1.			25	7									15	3			40	13		
2.			12	3													7	2	13	4
3.					23	6			30	6					14	3				
4.	11	5			15	4			23	5					26	5				
5.																				
6.																				
XIV.					19	5	54	18					18	4			36	12	31	10
XV.			5	2					1				29	6						
	200	100	359	100	386	100	295	98	466	100	308	100	509	101	485	100	302	101	316	99
	10		13		13		17		19		10		22		20		11		13	
	5		10		9		9		9		5		13		9		9		13	

discussion relating very closely to the teacher and give a more even but less detailed discussion of the many aspects of education than, for instance, either Dr. Cubberley or Dr. Judd. Dr. Bagley's interest in artistic classroom teaching leads him to use the teacher and teaching as dominant notes. Other writers are frankly descriptive and informational of everything with no dominant emphasis. A few stress the career opportunities in the field.

Fidelity to Plan of Organization.—The following summary statements contain the composite judgment of the writers and of half a dozen colleagues who assisted in analyzing the texts. Statistical justification for some of the statements appears in Tables I and II.

1. Certain individual books possess a definite scheme of organization, either announced in the preface, or legitimately inferred from the arrangement of the volume.

2. Certain of the books possessing such a scheme are rigidly faithful to the outlines. Major and minor headings are logically related to each other. Certain other books depart freely and erratically from their outlines.

3. Certain of the books have very vague organizations, and a few clearly do not have any scheme of organization.

4. Certain of the books manifest considerable evenness of treatment as between topics. Other manifest inexplicable unevenness. (See Tables I and II.)

The Relation to Later Courses and to Further Study.—In practically all teacher training institutions this course will be followed by others in general method, educational tests, educational sociology, administration, school hygiene, etc. Of the volumes listed, one alone, that by Dr. Cubberley, definitely and explicity relates itself to further advanced courses in the field.

Most of the others contain exercises, projects, and bibliographies which are common devices for securing further study. In these two respects, however, the most severe criticisms are merited. With the exception of one volume, that of Dr. Judd, the exercises and problems accompanying each chapter add practically nothing to the text. They neither clarify nor extend the discussion. Of course, individual exercises are found in each book which are clarifying, provocative, and enlightening, but taken as a whole the exercises are the weakest element in the books as a group. By actual count a majority are straight memory questions based directly on the text. Many are vague and deal with footling trivia. A considerable number could not be discussed intelligently at all by anyone. A few require of the student information he could not have.

nor readily secure. An astonishingly large number of those vague, indefinite, futile, "discuss" questions appear. It is distinctly odd that the excellent example of supplementary problems appearing in the very first book, brief as the list was, has not been more widely imitated.

The bibliographies were severely criticized by all who examined them. As with the exercises, there were exceptions, but in the main bibliographies are confined wholly to secondary references. Few original sources appear. Not only are the lists secondary but in most instances are brief, meager, and wholly inadequate. This is manifestly absurd in an introductory text designed to stimulate students to wide contact with rich backgrounds and original materials. In addition the bibliographic style in many instances was inexplicably amateurish. Many references were so incomplete as to cause the student more trouble than no references at all.

Summary of General Characteristics of Introductory Texts.

1. At least five methods of approach are found:
   a. Through the scientific study of educational problems
   b. Through description of the school and other factors
   c. Through an analysis of teaching
   d. Through the historical background
   e. Through discussion of career opportunities
2. No book stresses an approach whereby education is oriented among the social institutions and related to the social order. Many texts include such material, some of them in considerable amount.
3. Great differences in distribution of emphasis due to the dominant interests of the authors are to be noted.
4. The introductory texts, with one exception, do not relate their content explicitly to later courses.

With these general characteristics noted we may turn to detailed statistical analysis of content, which reveals differences in scope and distribution of content.

Method of Analysis of Texts.—Fragmentary analyses of this nature have been made previously and these proved very helpful to the writers.[3]

[3] Wager, R. E. *An Analysis of the Contents of Six Selected Introductory Texts in Education.* Unpublished materials, Emory University, 1927.

Burton, W. H. *An Extension of Dr. Wager's Study to Include All Texts to Date.* Unpublished materials, University of Chicago, 1929.

Reinhardt, Emma, "General Introductory Texts in Education in Teachers Colleges," *Elementary School Journal,* XXXII (September, 1931), pp. 57-66.

Gerber, Lee O. "An Analysis of Some Books Used as Texts in Introductory Courses in Education," *Educational Administration and Supervision,* XIX (December, 1933), pp. 652-6. Excellent critical comments.

Judd, C. H. "The Systematic Organization of Courses in Education," *School Review,* XLI (October, 1933), pp. 575-584. Not an analysis but suggestions for course arrangement.

The present analysis includes 17 of the 21 texts available and is far more detailed than previous attempts. The number of pages and the percentage of each volume devoted to given topics is shown in Table I which was constructed as follows:

1. A total list of all headings and sub-headings occurring in all books was constructed. New heads were inserted when necessary.
2. Headings referring clearly to similar material were combined, the commonest terminology being selected.
3. Material was classified where ever possible under the heading given by the author of the book in question.
4. In case of doubt as to the proper classification, the material was read by a number of faculty members and graduate fellows, consensus of opinion being used in placing the material.

TABLE II

MAJOR TOPICS IN RANK ORDER IN TERMS OF TIMES MENTIONED AND AMOUNT OF TOTAL SPACE. SHOWING ALSO RANGE OF DISCUSSION FROM BOOK TO BOOK

	Times Mentioned	Rank Order	Total Pages	Rank Order	Range from book to book	
					Pages	Percent
Educational Process	17	1	1005	1	16–130	4–65
Educational System: Description	16	2	868	3	12–175	3–37
Educational System: Organization	15	3	930	2	2–139	1–42
Curriculum	14	4	452	4	12–93	3–32
Philosophy of Education	13	5	289	8	4–37	3–16
Education as a Profession	12	6	338	5	7–56	2–21
History of Education	11	7½	313	7	20–105	5–23
Science of Education	11	7½	326	6	11–83	4–17
Pupil Population	10	9	242	9	12–41	4–14
The Teacher	8	10½	162	12	5–40	1–14
Educational Sociology	8	10½	228	11	8–54	3–18
Aim of Education	7	12½	156	13	15–55	3–18
Educational Psychology	7	12½	234	10	24–49	6–15
Educational Organizations	4	14	40	15	2–29	1–6
Comparative Education	3	15	89	14	4–18	1–14

Content Difficult to Identify and Classify.—A good deal of the material was classified without great difficulty, the headings used by the authors being reasonably accurate designations. If classification had been strictly by headings as they appeared in the books, many more headings would have appeared in the table. However, it was often necessary to exercise judgment and classify material elsewhere than under the heading used by the text writer. Illustrations in the following pages will make clear the nature and necessity of this reclassification. In a few cases ma-

terial in some books under a given heading could not by any stretch of the imagination be connected with the heading. In still other cases a text would contain no mention of certain topics as headings but would contain material clearly dealing with those topics. For instance one book has no explicit reference at all to the *Pupil Population* or its characteristics but does actually devote the better part of three chapters to this topic.

The classification of material in this analysis differs from that of previous studies, and in all probability would differ from that which might be made later by other analysts. It is significant, however, that no matter what classification is made each analysis presents similar pictures and justifies similar conclusions. The exact scheme of classification is therefore not so important.

Great Diversity of Opinion as to Major and Minor Topics to be Included.—The number of pages and the percentage of space devoted to the several topics is shown in Table I. These headings were, as stated, derived in part from the books analyzed and in part from the judgment of readers. Table II presents the major topics in rank order in terms of times mentioned. The variation from book to book is also shown including, of course, only those books treating the given topics. Otherwise the lowest number of pages for all topics except the one treated in all books would be zero.

Before summarizing the facts revealed by the tables comment should be made on a few random points. First we may note the omission of the topic *Rural Education* from the tabulation. Despite the fact that rural schools still care for about one-half the population and that rural school efficiency is an important national problem, only one of the texts analyzed, that of Dr. Cubberley, treats the matter adequately. Most books do not even mention the rural schools at all. Dr. Cubberley's material is included in heading VII-1 in the table.

The fact that discussions of *Aims and Objectives* are listed for but seven of the seventeen books might be misleading upon mere inspection. The truth is that most of the books do in fact dicuss aims or goals of education but under other headings. For instance the heading *Philosophy of Education* often includes good discussions of aims. Combining total mentions we find that discussions of aim do in fact appear in all but one or two books. Odd as it may seem it happens that in one or two instances discussions of the problems and processes of education are presented without reference to the aim of education.

As can be seen from the tables, the only topic to appear in all books is *The Educational Process*. This probably indicates the persistence of the view which makes education and teaching synonymous. Teaching is still looked upon as the most important aspect of the field. By contrast the heading *The Teacher* which deals usually and largely with personal attributes appears in less than half the books with amount of space steadily declining in later volumes. The writers venture to suggest that this trend toward minimizing discussion of the teacher as such is more sound than that toward continuance of lengthy discussion of the Educational Process. Discussion of the latter should appear in all introductory volumes but in brief form.

Topics appearing in all but one, all but two, all but three, and all but four of the seventeen volumes are, respectively, *Description of the School System*, *Organization and Administration of the System*, *The Curriculum*, and *Philosophy of Education*. This would seem to be in accord with expectancy. These four with *The Educational Process* represent the topics on which there is nearly unanimous agreement. There is, however, very little agreement as to what some of these headings shall include as we shall see in a few paragraphs.

The *Pupil Population* was a topic which, it was thought, would not only be mentioned in nearly all books but come in for steadily increasing amounts of space. Neither of these expectations was found true. The recent and current emphasis upon the pupil, upon pupil purpose, and upon the child-centered school has not affected introductory texts in any noticeable way as yet. The writers again venture a suggestion, namely that this topic should appear on a par with the five which appear in most books.

The following statements summarize the significant characteristics as revealed by the tables:

1. The number of major topics (approximately ten) is astonishingly even throughout the list, but the topics are not the same from book to book.

2. Only one major topic appears in all books, though four more appear in practically all books. These five, one-half the total, are all that show a high degree of agreement.

3. The number of minor topics (approximately fifteen) is also rather even through the list but from book to book is as diverse as the major items.

4. Six minor topics, two fifths of the total, appear in less than half the books. Nine minor topics appear in more than half the books.

5. One major topic appears in but three books and one in but four. Minor references to these topics do appear in some other books but not in sufficient amount to justify classifying as a separate heading.

6. Treatment of topics is astoundingly uneven from book to book. The four extreme cases show no discussion at all in some books, contrasted with 130, 139, 105, and 175 pages in four books. Minor heads show the same situation as major. The School Plant gets one page in two books, two pages in one book, thirty-four pages in one book, and no mention at all in twelve books. The Administration of the Pupil Population gets no mention in fourteen books but gets 72 pages in one book.

7. Treatment of three topics only, is reasonably even from book to book, these being Aim of Education, Science of Education, and The Pupil. Page variation for these respectively are 15 to 55, 11 to 83 and 12 to 41.

8. Treatment of the major topics within a given book varies greatly also. This, of course, cannot be discussed very helpfully as it is quite impossible to say what the distribution should be. The chief point to make is that obvious and gross maladjustments should be avoided. Major topics within a given book are found to vary from 7 to 139 pages, from 13 to 195 pages. Two books show much more even distribution, 16 to 54 and 11 to 56 pages respectively.

Great Diversity of Practice in Treating the Same Topic.—Great difficulty arose in analysis and interpretation because many topics can be discussed legitimately from any one of several viewpoints. They may be treated also from angles which do not seem logical. That they are diversely treated is one of the outstanding characteristics of the collection of introductory texts. For instance, *Educational Finance* may be treated, (1) by descriptively presenting practice without interpretation and analysis, (2) as an administrative problem, (3) as a sociological problem and in its sociological aspects. Some treatments (1) are confined to local finance, (2) others discuss all phases including theories of taxation. Again *The Extension of Educational Opportunities* may be treated, (1) by merely listing and describing the many illustrations of extension, (2) by describing the activities of one given school system without further reference to practice elsewhere or to underlying principles, or (3) through a critical analysis of the principles upon which extension should rest and without any very great reference to specific extension activities. *Methods of Teaching* may be (1) a fragmentary description of one or two trivial devices, (2) a fragmentary description of some general techniques, (3) an organized and reasonably complete description of general techniques, or (4) a discussion of the psychology of learning.

Great Diversity of Material may be Included under a Topic.—Furthermore within any given topic, regardless of general view from

which discussed, great confusion and variation of material and scope exists. A given heading may refer in half a dozen books to half a dozen different items, or to any combination of these items. In reading the following illustrations one must remember that in any given book the chief heading may actually include but one or two of the sub-points which will then constitute the total treatment of that topic in that book. As a rule a heading includes several of the sub-topics but these may be wholly different from book to book. For instance:

The Pupil as heading may refer to: (1) the child study movement, (2) original nature, (3) juvenile delinquency, (4) the pre-school movement, (5) laws of growth, (6) hygiene of the school child, (7) the periods of development, (8) mental and physical characteristics, (9) intelligence testing, (10) nature versus nurture. The topic is wholly omitted in some books.

The Pupil as sub-topic may appear under such headings as (1) the curriculum, (2) self-government, (3) physical conditions of study, (4) methods of teaching, (5) distribution among types of schools, (6) individual differences, (7) growth, (8) child study, (9) learning process.

Measurements may be treated (1) separately as a major topic, (2) as a phase of the scientific movement, (3) under educational psychology, (4) under administration, (5) under method of teaching, (6) under variation in achievement, (7) under grouping, (8) under curriculum, (9) under grading of pupils, (10) under variability.

The most difficult topic is probably Educational Psychology, its protean nature in this analysis probably reflecting the general uncertainty over its meaning and reference. It may mean, according to the given book examined, any one or any combination of the following:

(1) laws of learning, (2) principles of teaching, (3) explanation of chronological, physiological, and mental age, (4) brain and nervous system, (5) process of thinking, (6) process of habit formation, (7) native reaction patterns, (8) reflexes, instincts, emotions, capacities, (9) interest and attention, (10) variability, (11) principles of curriculum making, (12) child study, (13) adolescent psychology, (14) growth and maturity, (15) periods of development, (16) mental hygiene, (17) abnormal psychology, (18) intelligence testing, (19) classification and grading, (20) health and hygiene, (21) development of conscious control of behavior, (22) induction, perception, etc., (23) pupil achievement.

The foregoing summaries are, of course, composites gathered from all books. However, within one book similar confusion and very wide distribution of one topic may be found. The divisions within one topic within one book may even vary in rather bewildering fashion. For instance:

The Pupil and His Progress:

The Primary Period discusses: (a) characteristics of childhood, (b) materials used with primary children, (c) qualifications and training of primary teachers.

The Intermediate Period discusses: (a) methods of teaching, (b) principles of learning, (c) supplementary materials.

The Secondary Period discusses: (a) organization of the school, (b) characteristics of the pupil, (c) current thinking on problems of secondary education.

In this particular volume the bulk of actual description of the pupil population comes under other headings than those just listed. Several pages could be filled with illustrations similar to those preceding.

Few Trends Noticeable. — The writers were surprised to find that, though the books have been appearing over a period of eighteen years, few marked trends have been developed. Three only are clear, with three other items worthy of comment.

1. There is steadily increasing recognition of the value of discussing education as a career field and of discussing the personal relations of the prospective worker to the field. Only three of the first six books discuss this, giving but 10, 7, and 4 pages respectively to the topic. Of the last six books, five discuss it, giving 53, 15, 40, 47, and 13 pages respectively.

2. There is a steady decrease in amount of space devoted to discussion of the personal attributes of the successful teacher. The topic is omitted in several recent books.

3. There is steadily increasing recognition of the value of discussing the scientific movement in education and its techniques. Of the first four books, only two discuss it and one of these references is a meager discussion of the use of statistics. Of the last four books, all discuss the topic, giving 35, 83, 29, and 27 pages.

Other items deserving of comment:

1. There is a steady but small increase in the amount of space devoted to the philosophy of education. However, two of the recent books omit this heading as such.

2. The topics Educational Psychology and Educational Sociology about the definition of which there is constant argument, appear in about one-half of the books. They appear as often in recent as in early books. The amount of space varies irregularly and no trend appears.

3. The pupil as an element in the situation does not seem to be securing added recognition, either through more frequent inclusion as a major topic or through increased number of pages. (This is somewhat contrary to expectancy and was commented upon earlier.)

Three revisions of texts appear in the list, each of which remains faithful to the original scheme and view. No important changes are made, discussions being amplified and brought up to date.

Introductory Texts Vary Greatly in Every Characteristic.—It is evident that, from book to book, the greatest differences exist in regard to method of approach, scheme of organization, inclusion and exclusion of content, fidelity to announced scheme, and in scope and distribution of content. This would seem to present a situation of hopeless confusion and even of some immaturity of thought and writing. Genuine weaknesses do in fact appear but it is to be emphasized that a certain amount of confusion, or better, disagreement, is not only to be expected but is in fact wholesome. Experimentation, growth, and seeking for better organization is going on and this, as always, produces an appearance of outward confusion. Personal interest, training, and views of authors also contribute largely. Furthermore, it is to be emphasized that certain characteristics of individual books cannot be derived from this tabular analysis showing comparative practice and the characteristics of the books as a group. Thus, sweeping negative criticism of given books is unjustified. However, on the basis of the analysis, the illustrations, and the inspection, it is justifiable to say:

1. The books vary enormously in every single characteristic from aim to bibliography.
2. Certain books have a well thought out scheme of organization. Some of these follow the scheme logically, others do not. Still other books do not have any clearly thought out scheme of organization. Many depart from the vague outlines they do have.
3. There is no agreement among the various writers as to the proper method of approach or introduction, through which the student is to be initiated into the field.
4. There is no agreement, except for the five topics noted earlier, as to the proper material to include in these courses. (Perhaps there never can be complete agreement due to fundamental differences of philosophy but it would seem that at this stage of development it should be possible to agree fairly closely on certain core items.)
5. There is no agreement concerning the meaning, reference, and importance of certain topics agreed upon for inclusion by a majority of writers. (It would seem that except for one or two—perhaps educational psychology and educational sociology—there could be greater agreement as to what to include and how much.)
6. There is, in fact, considerable agreement among the majority of writers as to the meaning and reference of a few major topics.

POSTULATES FOR A THEORY OF EDUCATION
II. A METHODOLOGY FOR EDUCATIONAL RESEARCH

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IN the first paper of this series[1] it was pointed out that science in general has followed one or the other of two thought patterns, from the time of the Ancient Greeks. One of these patterns was vitalistic, the other mechanistic. It is important to understand the nature of these two positions, and their respective faults, because it is precisely to these faults that the major errors of scientific reasoning and methodology have been due.

We shall assume (1) that Education faces exactly the same *types* of problems that the other sciences face; (2) that experiment in Education is wasteful and ineffective unless the objective of the experiment is the result of careful *deductions*; (3) that the fear of "getting away from the facts" is stupid and harmful, and is resulting, now, in the ignoring of facts; (4) that those who are crying the hardest, today, about *facts*, have the least to offer for the good of Education. This is because, unmindful of the history of science, they do not know what constitutes a fact. Those who are doing the most for Education, today, are thinking as well as experimenting. Further, it can be demonstrated that, today, there is an over-emphasis on purely inductive facts (which are never adequate) which comes from a faulty atomistic approach to nature. This atomism, in turn, is the result of inadequate scientific training. The naïve mind is invariably vitalistic or mechanistic. Both positions are atomistic.

Education has passed through the first major stage of its history, the stage during which the discovery was made that the destiny of civilization rests, partly at least, upon an experimental science. No two men have contributed more to this stage than John Dewey and Edward L. Thorndike. It was a large order. Now Experimental Education faces the task of adjusting its views and methods to a universal change in Science, namely, the change from absolutism to relativity. It would be unable to make this adjustment if it were not already on its feet as an experimental science.

The first of these adjustments is methodological, and the initial step, according to our best scientific authorities, was discussed in the previous

[1] Wheeler, Raymond Holder. "A Set of Postulates for Educational Theory. I. The Background," *Journal of Educational Research*, XXVIII (January, 1935), pp. 321-333.

paper. The concept of laws precedes systematic experiment and measurement. The problem remains of analyzing more fully the nature of scientific law and method. But before this can be done we must return to the question of vitalism and mechanism.

The issue cannot be laid aside. No matter what the science, a problem cannot be conceived, attacked and solved without logical reasoning and logical reasoning will inevitably follow the one pattern or the other, until the investigator learns not to do so. He can learn not to do so only after he has inspected each pattern for its fallacies, and has made the necessary corrections.

These logical patterns govern the statement of the problem, the method of solving it, and the interpretation of results, usually unrealized by the investigator because the pattern is usually implicit, consisting of uninspected inferences, implications and assumptions. The assumptions of *vitalism* are as follows: (1) There is order, or design in nature; (2) the order is teleological—obeys final causes; function determines structure; (3) the plan of nature is a repetition of part-whole systems wherein the part is subordinate to the whole; (4) "wholeness" is the unity of a complex system interrelated by means of a special force or quality residing in the whole; (5) this force or quality is innate in the whole; (6) the part is an image or copy of the whole; (7) parts come into existence through differentiation, because the whole is primary; (8) deduction reveals this plan of nature; (9) the whole is external to its parts (and oversummative), that is, determines or regulates them from outside, hence law is externally imposed and the parts are passive victims; (10) freedom is derived from submission, and a merging of the parts into the whole (coöperation).

Such was the pattern that prevailed in the reasoning of Plato and Aristotle, the early Church Fathers, the philosophy of the Middle Ages, much of 17th century philosophy and science, and again in the philosophy and science of the early 19th century. The search for universal laws by Kepler, Galileo, Newton, Descartes, Leibnitz and Spinoza; the theory of epigenesis in biology; the earlier psychologies based upon the primacy of the self or soul and the process of appercception; the absolute dictatorships of Popes and Kings, with attending organic conceptions of the State, were all direct outcomes of this pattern. Indeed, wherever form, unity, or a totalitarian condition was emphasized, this pattern was at work. We see much of it in the mysticism both of the orient and of Christian beliefs. Strong evidence of it is found today in the biology of

Hans Driesch, the psychology of Wm. MacDougall, and the rise of contemporary dictatorships.

The assumptions of *mechanism* are as follows: (1) There is no order or design in nature; (2) causes are efficient or contingent, not final; (3) the universe, from the standpoint of science is fortuitous; structure determines function; (4) the structure of the universe is atomic, and purely summative; (5) the part is primary and qualities or forces are innate in them (elementarism); (6) the complex is derived from the simple by a bonding or synthetic process of some kind; (7) the whole (thus derived) is a mechanical combination of elements; there is no process such as individuation; (8) induction reveals the facts of nature; (9) law is merely the regularity of events, expressing an empirical predictability, to which existing things are passive victims; (10) there is no freedom, except that implied in the innate powers of individual parts, hence, if achieved, it comes through the mechanical mastery of one force over another (conflict).

Notice how, for the most part, mechanism is the opposite of vitalism. History shows that the mechanistic pattern has generated atomism in science, individualism in society, and imperialism in politics. It is not strange that it should be a correlate of civil and revolutionary war periods, and the logical basis of conflict theories of biological and social evolution, *laissez faire*, hedonism and utilitarianism. Likewise, it is the basis of association and conditional reflex psychology, the cell theory and preformation in biology, the atomic theories of physical science and contract theories of the State. This is the pattern that generates empiricism rather than rationalism, and leads to the view that measurement is the basis of laws. The other pattern assumes that laws lead to measurement. The American conception of Democracy is distinctly a product of mechanism, as are American methods of Education.

But, strangely enough, opposite as they are, the two patterns can be resolved into one. Both are vitalistic and both are mechanistic. Remember that *both make the assumption of native traits,* vitalism with respect to wholes and mechanism with respect to parts. It is the same assumption that makes the one pattern vitalistic and the other, mechanistic. *If this assumption is not made, both points of view vanish.* Not, however, certain of the postulates of each. Now *the modern point of view in science is precisely the abandonment of native traits, either with the whole or the part as the point of reference.* This alone accounts for the radical character of relativity, so prominent in contemporary physics, or-

ganismic biology, Gestalt psychology, and the new functionlism in social science. Notice how this important change alters both vitalism and mechanism. We now have one set of postulates instead of two. Let us call it the *organismic position*. Limitations of space require that we condense a considerable amount of reasoning into a few words.

1. Every event is related to every other event, in terms of an absolute.
2. This absolute is a transposable pattern of dynamic relationships, that follows universal laws, i.e., a dynamic Gestalt, or transposable whole, whose absoluteness accrues to transposability of form.
3. Every whole is a part and every part a whole in virtue of the universal duplication of pattern relative to part-whole relationships.
4. The attributes of parts are derived from their position in the whole or wholes of which they are members. Hence it follows from three and four that all attributes are derivatives. There is no last whole; there is always a more comprehensive one than that which we have.
5. The logical interrelatedness (mutual deducibility) of correctly chosen postulates transposes to the dynamic pattern of nature, hence the origin of predictions by means of natural laws.
6. If different phenomena obeyed different laws, interrelatedness and predictability would vanish.
7. If wholes were composed, and built up from, parts, native and therefore independent properties of the parts must be presupposed, and interrelatedness would vanish.
8. From the principle of derived properties it follows that wholes, not parts, are dynamically primary. This is the principle of determined action, or the ninth postulate of vitalism, shorn of its vitalism by the third postulate just above.
9. Every whole, by definition, has parts. There was no first whole, hence the problem of origins is always the problem of *new* parts. Since the whole is dynamically primary, new parts *come from* an old whole, through *differentiation*, with the whole as the frame of reference.
10. But, the old wholes were already structured into parts. With parts as the frame of reference, new parts come into existence through *closure*. Both individuation and closure are *emergent* in character, and are aspects of the same process.

So much for the general aspects of the organismic position. Suppose we apply this logic to the ten postulates back of vitalism and of mechanism, to see how they become one set.

1. There is order or plan in nature, but not in virtue of an external design imposed from outside (*deus ex machina*). The plan is a "given," describable, deductively and inductively, by laws of dynamics.
2. This order is teleological, not in terms of a pre-existence of external design, but in terms of the future state, equilibrium, or in other words, in terms of the laws of energy. Contingent are secondary to final causes.

3. Structure is stationary function, and function is structure in action. The two are interchangeable. Neither is the cause of the other, ultimately.

4. The part is subordinate to the whole, but in being so, derives freedom, and participates in the causal process (emergence).

5. The properties back of parts and wholes are derived from more comprehensive wholes, *ad finitum*.

6. "Analytic" and "synthetic" processes become individuation and closure, two aspects of one process.

7. Methodology is a simultaneous employment of deduction and induction.

8. Every whole is over-summative but none is supernatural. The oversummative character exists as a "field property." Summative phenomena in nature have to do with conservation of energy, and not with organization as such.

9. Law is not imposed from without; it is an expression of nature from within. Law means self-determination.

10. Evolution proceeds through competitive-coöperation. Coöperation is the primary process.

Perhaps we have now said enough to make our discussion of a new methodology for Education more meaningful in the light of contemporary scientific thought. The need of a new methodology grows out of a revised conception of fundamentals all along the line.

The deplorable state of knowledge during the middle ages and the tragic resistance of the church against scientific progress for three hundred years tell the story of how the vitalistic pattern, with its overemphasis on rationalism and deduction can hamper the acquisition of knowledge. The objection of Roger Bacon in the 13th and Francis Bacon in the 17th century to rationalized dogma was not, however, due to the evils of deduction as such, but to the fact that it was given no observational check.

On the other hand, the mechanistic pattern, with its over-emphasis upon empiricism and induction, its unwarranted prejudice against the existence of trans-observational phenomena, its blind faith in statistics, its vain search for irreducibles, indeed, its appalling naïveté in general, has achieved no more in the history of science than the vitalistic pattern. Its agnosticism, its artificial compartmentalization of knowledge, its hostility toward philosophy, may easily have been as harmful down through the centuries as vitalistic dogmas.

We are taking for granted the positive contributions of each point of view. Wave theories; principles of maxima and minima; individuation; universal laws such as that of gravity; attempts to unify diverse data by

means of hitherto undiscovered principles of an abstract character; the dynamics of form; the concepts of integration, potential, field theories and relativity; conservation and mass action laws; and thermodynamics, all date from vitalistic periods of the past. Statistical analyses; the kinetic theory of gases; tremendous advances in accurate measurements and structural knowledge, as in the discovery of molecular weights; and advances in microscopic anatomy, pile up during mechanistic periods. The first pattern stimulates theory, the second, observation. The problem, now, is to overcome the prejudices and limitations of each approach. The success so far achieved by relativistic physics, organismic biology and Gestalt psychology is largely traceable to this very effort, carried out at least implicitly.

It would seem, then, that an inspection of scientific method, with conscious effort to avoid the fallacy of both positions, that of native traits, would result in an important advance.

Let us now inspect the consequences, for methodology, of abandoning both vitalism and mechanism, and of accepting the working hypothesis that unifies the acceptible points which both views had advanced.

1. The absolute is fixed as to form or pattern only. There is no absolute, fixed as to magnitude or complexity. Multiplying instances by an inductive procedure, therefore, does not, *ipso facto,* increase the certainty of knowledge. (The mechanist has always exhibited as blind a faith in induction as the vitalist has in deduction.) Where an infinite number of repetitions is possible, induction cannot generate proof. Generalizations do not follow from a multiplication of cases.

2. On the other hand, deduction, alone, will not lead to prediction in the absence of observation, for general principles must be differentiated with respect to particular phenomena, and particular phenomena can be known only through observation.

3. It follows, therefore, that the most fruitful method of science is a simultaneous use of induction and deduction.

4. Deduction, relative to observation, yields insight into the nature of unity, form, and the laws of wholes. Induction, relative to deduction, yields the test of whether the deductions actually make predictions. It results in knowledge of how to apply the laws, arrived at deductively.

5. Scientific laws are hypotheses, always hypotheses, subject to correction. They are theories, deduced in the light of limited experience and then found valid by means of systematic experiment.

6. The basis of validity is twofold—logical consistency of deduction, and the consistency with which the deduction makes actual predictions (uniformities of events). Neither criterion is safe without the other.

7. The elimination of native traits removes from science the problem of *why*. Scientific laws pertain to the *how* of processes, *i.e.*, to nature's *methods*.

8. Truly empirical laws are temporary makeshifts, and quite unsafe to follow, unreservedly. Statistical data are ultimately valid only for the purpose of measuring the various errors of prediction, due to inconstancy of conditions. Such procedures as factor analysis are useful only when conditions *happen* to remain relatively constant, or *happen* to change in manner capable of being anticipated. The validity of sound anticipations of events hinges on sound logical reasoning, based on the assumed constancy of the dynamics of form.

9. Experiment is not the main source of scientific principles. It is the means of *testing* a deduction. Insight and creative imagination, relative to observation, are the important sources of principles.

10. The attempt to predict a specific quantitative change at a given place, at a given time, without having first ascertained the success of a more general prediction is both stupid and wasteful. One should first determine the invariability of the *direction* of the change (more than or less than). But the *direction* of the change cannot be invariably determined until *how the event can occur at all* is discovered. This knowledge rests upon a still more general type of prediction, by a still more general type of law. The reason for all this should be obvious. A specific quantitative change in a given place, at a given time, is the behavior of a part within a whole. Until the conditions within the whole (its field structure) are known, the direction of the event is uncertain. But furthermore, unless the dynamics of fields in general is known, any prediction at all is uncertain.

11. The genesis, then, of fundamental principles in science, is as follows:

a) A principle, or set of interrelated principles, is conceived, predicting that events can occur at all. The kind of event, *i.e.*, its phenomenal aspect, is quite a secondary matter, to be faced later, in scientific procedure. This means that the first laws to be conceived are naturally the most general, *but they are the most important of all.* Several laws of this sort have been proposed for centuries, in one form or another. Wheeler has stated some of them, namely, (1) the Law of Field Properties, (2) the Law of Determined Action, and (3) the Law of Configuration. These laws predict, in terms of a field theory, how events can occur at all. In scientific reasoning they are constantly implied, but are seldom stated. Instead of not being useful, because of their generality, as certain critics insist, they are indispensable. They are used implicitly *all the time.* Let us call these laws predictions of Step I.

b) From the laws of Step I, those of Step II can be deduced. These are less general in nature and predict *the direction of a process and hence to judgments of more than, and less than, but not without their basis in Step I.* Some of the laws that belong to this stage of prediction, Step II,

are (1) the Law of Derived Properties, (2) the Law of Individuation, (3) the Law of Field Genesis and (4) the Law of Reciprocal Change.[2]

c) From the laws of Step II, further deductions can be made, of a precise, quantitative character, in experimental situations. These are predictions of a specific quantitative change at a given place, at a given time. While space does not permit including the evidence here, it turns out that all laws of this, the final stage of prediction, are maximum and minimum laws and their derivatives (goal gradient, acceleration laws, closure, least action, maximum work, etc.). However, these laws are also useful and perfectly valid at stage two, even when accurate measurements cannot be made, so long as they consistently *order* the data at hand. Exact predictions of this stage assume measurements, and a constant knowledge of field conditions.

12. Measurement is not the source of laws. Rather, it permits expression of a previously conceived law in mathematical terms. A conception of a law is necessary before an experiment can be planned, apparatus constructed, and units of measurement decided upon. In other words measurement depends upon the conception of laws. But how many there are who really believe the opposite.

13. Laws are heuristic, operational principles, valid only if transposable from one set of data to another, and from one science to another. A law, to be a law, must in some way be universal.

14. A single true exception invalidates a law.

15. A single experience, with insight, may be truly presumptive of a law.

16. Laws are valid only when they permit handling the general and the particular at the same time, that is, the particular, as a special case of the general. No one has brought out this problem more clearly than Count Alfred Korzybski, in his insistence upon *extensional* thinking.[3] There is no such thing in nature as the general, separate from the particular, a whole without parts. There is no such phenomenal reality as a general man, even in thought, but there is the class, man, involving individual men. We can best represent the situation by the expressions Smith_1 Smith_2 Smith_3 Smith_4 *et cetera*. It is impossible to think of particulars without presupposing generalities, and *vice versa*. There is, then, no process like that of generating universals by multiplying cases. But there is the process of expanding one's conception of the general, that is, of differentiating it, clarifying it, and rendering it more accurate in the course of observing individual cases.

Here it needs pointing out that *both* deduction and induction, when isolated, have their dangers. When the child calls a cat, a skunk, and a muff all by the same name, "kitty," he is generalizing prematurely, for

[2] To be explained elsewhere.

[3] *Science and Sanity*, Science Press, Lancaster, Penn., 1933.

the want of detailed observation. Adults do the same thing in identifying capitalism with government, as a consequence of which they erroneously assume that an attack upon the one is an attack upon the other. On the other hand, induction, unsafeguarded by deduction, leads to forms of blindness that are equally as absurd and disastrous. The child cannot tell how a cat, a snake and a tree are alike. Overemphasis of differences of this sort lead to harmful prejudices, individualisms and atomisms. It splits things that are not split and prevents an adequate grasp of interrelatedness and unity. The inductive method, alone, could never have lead to modern physics. It never built *any* science, and never will. Race and religious prejudices, harmful nationalisms, unsafe and inaccurate guiding principles, a distorted conception of the practical, selfishness, atomism in science, disastrous economic practices, *all* spring from the same source, the inductive pattern, isolated from the deductive. On the other hand religious dogmatism, political tyrannies, mysticism, vitalism, result from the deductive pattern (starting with the whole) in the absence of adequate induction (noticing the parts).

(This is the last of the series.)

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(Signed) George A. Brown
Publisher of the *Journal of Educational Research* and President, PUBLIC SCHOOL PUBLISHING COMPANY, Bloomington, Illinois.

Subscribed to and sworn before me on
this thirtieth day of October, 1935
(Notary's Seal)
Yarda Pierson
Notary Public

SOME ASPECTS OF THE RELATIVE INSTRUCTIONAL EFFICIENCY OF MEN AND WOMEN TEACHERS

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THE PROBLEM

THE number of men employed as teachers in the elementary schools of the U. S. except for a slight rally in the period 1920 to 1926 has decreased steadily since 1890. While the number of men teaching in the public secondary schools has increased steadily from 3,648 in 1890 to 68,738 in 1928,[1] the women teachers still outnumber the men in the secondary field almost two to one. This proportion has remained practically stationary for several years. Moreover, we find a larger proportion of men in the larger high schools than in the smaller. If any advantage is to be gained by employing more male teachers, the pupils in our smaller high schools do not share this benefit in a degree similar to that obtained in the larger schools.

At this time, when the cry for retrenchment in school expenditures is heard on every side, certain questions are brought strongly to the fore: If a higher grade of women teachers than of men is available at the same or at a lower salary level, why employ men? Are men teachers really more efficient than women? Is either sex better qualified to teach certain branches than the other? Are there social or other reasons why it would seem desirable not to decrease the number of men teachers in our schools, perhaps even to increase them? It was with these questions in mind that this study was undertaken. The investigation was carried on along three lines:

1. Since pupils see their teachers day after day, and in many ways make contact with them more than almost anyone else, it was thought their reactions might throw some light on one or more aspects of the problem.

2. Since most superintendents of schools have had the opportunity to observe the work of both men and women teachers under their supervision, their opinions with respect to certain phases of the problem seemed worth obtaining.

3. To obtain a basis of comparison of the classroom efficiency of the two sexes, a comparison was made of the scores attained by pupils taught

[1] Editorial Comment: "Proportion of Men and Women Teachers in the United States," *School Review*, XXXVIII (October, 1930), pp. 571-572.

in the same subjects by men, with scores made by pupils taught by women, on the Minnesota state board of education annual written examinations.

WHAT THE PUPILS THINK

To obtain the opinion of pupils relative to their preference for men or women teachers, a check list was used. A copy of this check list was given to each pupil in the Senior-Junior High School at Alexandria, Minnesota, present on a certain day. This school comprises grades 7-12 inclusive. The teaching staff at that time consisted of 13 men and 14 women. These pupils have had contact with teachers of both sexes, not only with these 27 members of the staff but also with others no longer connected with the school. A total of 220 lists were returned by the boys and 343 by the girls.

Each check list enumerated a number of characteristics and each pupil was asked, by checking in the proper column, to indicate in which characteristics he felt men teachers were superior, in which women teachers were superior, or in which he felt there was little difference. The traits on which he was expected to express a judgment were as follows: Taste in dress; knowing how to get along with pupils; popularity with pupils; students are not afraid to tell their secrets; sense of humor; business-like attitude; knowledge of subject taught; ability to make subject interesting; ability to make subject understood; teaching skill; ability to wield good influence over boys; ability to wield good influence over girls; interest and participation in extra-curricular activities; participation in community affairs outside of school.

On none of the items was there unanimous agreement as to the superiority of either sex. In a number of items there was a decided tendency towards rating one or the other as superior, and in several the tendency was to indicate little difference between the sexes. Both boys and girls tended to agree that men teachers were to be preferred from the viewpoint of showing a more business-like attitude, possessing a finer sense of humor, and in their ability to wield a good influence over boys. The ability to wield a good influence over girls is the only item in which both groups showed a marked preference for women teachers.

Almost one-half (48.9 percent) of the boys felt that women teachers excelled in their knowledge of subject matter, whereas a majority (60.0 percent) of the girls felt there was little difference.

Boys and girls preferred teachers of their own sex in whom to confide (57.0 percent and 54.6 percent respectively), and felt they could make their subjects more interesting (43.8 percent and 38.3 percent respec-

tively.) This may be important as evidencing the fact that men are better acquainted with boy psychology and women with girl psychology, and can grasp the pupils' viewpoint more easily than can a teacher of the opposite sex. A larger number of boys (43.5 percent) rate the men teachers higher than women teachers in their ability to make their subjects understood, while the girls (40.8 percent) feel there is little difference between the two. Over one-half of the boys (56.9 percent) feel that men teachers are more interested in extra-curricular affairs, while almost the same proportion of girls (44.1 percent) think there is little difference. Similarly about two-fifths of the boys (39.9 percent) deem the men were more active in their participation in community affairs while the girls (52.3 percent) tend to rate the sexes as being about equal. Both boys and girls feel there is little difference exhibited in general teaching skill and in the ability to dress in good taste.

There seems to be a tendency on the part of the boys to prefer teachers of their own sex, while girls tend to express a feeling of little preference. This may be due, of course, to a feeling of sex loyalty, perhaps unconscious, on the part of the boys. However, it is more apt to be an expression of the desire of the adolescent boy for those qualities of virile leadership which his condition demands.

When we disregard the sex of the pupils in the returns, we find on the whole, a tendency to consider the teachers of both sexes as being about equal, or to consider the men teachers as being slightly superior.

WHAT SUPERINTENDENTS THINK

To obtain the opinions of superintendents on this question, a list of 24 qualities considered desirable in teachers was sent to the superintendents of those schools from which the state board results, to be discussed later, were used. Each superintendent was asked to place a check after each trait in the proper column as expressing his opinion that men or women excelled in that particular trait, or as feeling that there was little difference between them. Replies were received from 67 superintendents.

The qualities listed were: good taste in dress; discretion; tactfulness; courtesy; congeniality; sense of humor; optimism; forcefulness; leadership; business-like attitude; professional interest; loyalty to superintendent, principal and fellow workers; knowledge of subject; ability to come down to pupils' level; ability to secure student respect; ability to secure student activity; teaching skill; ability to secure desirable educational outcomes other than knowledge of subject matter; ability to

wield desirable influence over boys; ability to wield desirable influence over girls; interest in extra-curricular activities; participation in community affairs; ability to relate subject to practical applications outside of school; response to supervisory effort.

A few of the superintendents sent brief comments with their replies. Below are given a few of them, which are typical:

The superintendent of one of the larger systems in Minnesota, a man well known over the state, wrote: "In my experience, the above traits have been largely an individual matter, depending for their possession upon the person rather than upon sex."

Another said: "There are always individual variations, but as a class, men and women teachers are about alike in general attitudes."

A third note read: "Individuals differ more than the sexes."

A fourth man wrote: "Having too many women in the schools, especially at the junior high school age, has produced a type of boy who is not virile enough to suit my ideals."

The superintendent of one of the smaller schools stated: "I can't see any difference. I have had inefficient and efficient teachers of both sexes."

In summarizing the responses of the superintendents, it was found that they tended to rate the sexes as being practically on a par on a large number of the characteristics listed.

Men are thought to be more congenial (52.4 percent) and forceful (67.7 percent), to exhibit leadership in a greater degree (63.1 percent), and to show a more business-like attitude (54.0 percent), to be capable of wielding a stronger influence over boys (85.9 percent) and of better relating their class work to practical applications outside of school (70.3 percent), and to be somewhat more active in extra-curricular (40.6 percent) and community affairs (44.4 percent) than are the women. One superintendent said this was because of their greater possibilities in this last respect. The women on the average are more courteous than the men (53.8 percent) and are capable of exerting a stronger influence over girls (78.1 percent).

On the whole, superintendents feel there is no great difference between the sexes in the traits studied. Where preference is indicated, it is likely to be in favor of the men. Only in their ability to wield a desirable influence over pupils of their own sex do the superintendents think that men and women teachers each have a particular sphere.

THE RESULTS OF THE STATE EXAMINATIONS

Each year the State Department of Education in Minnesota prepares an examination in the various high school subjects, including those of the eighth grade and some of those of the seventh grade. These examinations are based on syllabi for various courses prepared by the Department and are obligatory for certain schools, but optional with the larger number of schools in the state. Permission to use the results of the tests for 1931 was generously granted the writer, by the State Department of Education, and the data presented herewith thus obtained.

For the benefit of readers who are not acquainted with the workings of the Minnesota state board examinations, a word of explanation in so far as the securing of data for this study is concerned, may well be given. After the examination is completed in any subject, the papers are scored by the local teachers. A summary of the distribution of the scores in each subject is sent to the State Department of Education from each school, and from these individual distributions, a distribution for the entire state is prepared for each subject. On the basis of this distribution, a "passing mark" is computed, the plan being that 25 percent shall be "failed," 50 percent "passed," and the highest 25 percent shall be called "pass plus."

Each teacher, after administering an examination, prepares a "class list" listing all his pupils, together with the score achieved by each pupil. These class lists are forwarded to the State Department together with the papers. The papers are rechecked here, and opposite each student's name on the list is entered a notation as to whether he has "passed" or "failed." It is from these lists, as well as from the distribution sheets of the various schools that the data used in this study were obtained.

The class lists are arranged alphabetically by schools and bound in volumes of convenient size. To secure as nearly a random sample as possible, some schools were selected from each volume, largely by chance, although some effort was made to secure results from schools located in various sections of the state. No results were used from schools classified as "Class A" schools, which include the smallest schools in the state. Since the teachers' names were signed to their class lists, it was possible in most instances, to determine whether the classes were taught by men or women teachers. Where this was impossible, the results were not used. Where different sections of the same subject in a particular school were taught by both men and women, and where it was impossible to distinguish which students were taught by the various teachers, the information was not included. The results from approximately 77 schools were

gathered. Later, it was found best to discard the results from certain schools in some subjects because of discrepancies in the numbers between the distribution sheets and the class lists.

For each school selected for the study, two types of information were gathered: first, the number of students passing or failing a particular examination in each school; secondly, the distribution of scores in these same subject fields and schools.

TABLE I

DIFFERENCES IN PERCENTAGES OF PUPILS PASSING THE STATE BOARD EXAMINATIONS IN CLASSES TAUGHT BY MEN OR WOMEN TEACHERS

Note: Each cross represents a difference of 0-5 percent in the number of pupils who passed the state board examinations

Subject	Men	Women
Introduction to Social Science		x
High School American History		x
Modern History		xx
Economic Geography		xx
Ancient History		xx
Elementary American History	x	
Elementary Citizenship	x	
Elementary Geography		xxxxx
Physics		x
Chemistry		xx
Biology		x
General Science		x
Solid Geometry		x
Plane Geometry		xxx
Elementary Algebra	x	
Elementary Arithmetic		xxx
Latin I	x	
Latin II	xx	
Bookkeeping	xx	
General Business Training	x	

By means of Table I, an attempt is made to present a summary of the findings relative to the ability of pupils to pass the state board examinations when taught by men or by women. Each cross represents a difference of 5 percent or less in the percentage of pupils who passed the state board examinations in a certain subject between classes taught by teachers of different sexes.

If we consider a difference of five percent as having little significance we can eliminate a large number of subjects from the discussion. In geography the women have a marked advantage, (25-30 percent). They have a considerably better record in plane geometry and arithmetic, (15-20 percent) and a slightly better one in ancient history and modern history, economic geography and chemistry (10-15 percent). The men teachers have a slight advantage in Latin and bookkeeping (10-15 percent).

In Table II is presented a summary based upon the differences in the median score by classes taught by men and by women teachers. Each cross represents a difference in the medians of 5 points or less. Two crosses in a given section indicate a difference of 5 to 10 points, and so on.

Since a difference of 5 points or less in the median is small, and has little significance, we may safely disregard them in our consideration. Upon examining Table II we find that men do not possess an advantage of more than five points in the median for any subject. Women teachers seem to excel in the teaching of geography and plane geometry. The median score of pupils taught by women in these subjects is from 15 to 20 points higher than those for the men teachers. The median score of pupils taught by women also exceeds that for the men by from 5 to 10 points in ancient history, modern history, high school American history, elementary American history and elementary arithmetic, though the difference in ancient history and elementary American history was but slightly in excess of 5 points.

TABLE II

DIFFERENCE IN MEDIANS IN STATE BOARD EXAMINATIONS OF CLASSES TAUGHT BY MEN OR WOMEN TEACHERS

Note: Each cross represents a difference of 0-5 points in the medians for classes in the state board examinations

Subject	Men	Women
Introduction to Social Science		x
High School American History		xx
Modern History		xx
Economic Geography		x
Ancient History		xx*
Elementary American History		xx†
Elementary Citizenship		x
Elementary Geography		xxxx
Physics		x
Chemistry		x
Biology	x	
General Science		x
Solid Geometry	x	
Plane Geometry		xxxx
Elementary Algebra	x	
Elementary Arithmetic		xx
Latin I	x	
Latin II	x	
General Business Training		

*The difference is 5.4 points. †The difference is 5.2 points.

On the whole, with the exception of geography, we may say that there is little difference in the teaching efficiency of the sexes as measured by the State Board examinations. In the majority of subjects there is only

a very slight or negligible difference in favor of either sex, although that difference tends to be in favor of the women teachers, and the greater differences are always in their favor.

A review of the results obtained indicates that:

1. Pupils tend to rate men and women teachers as being about equal on most of the traits listed. Where there is a preference, it is usually in favor of the men, except that women teachers are rated far superior in their ability to exercise a good influence over girls. Boys seem to prefer men teachers, while girls are more apt to express little preference.

2. There is a tendency on the part of superintendents to agree with the pupils that there is no great difference in the ability of men and women teachers. They also agree with the pupils in the opinion that men teachers are apt to be more influential with boys, and women teachers with girls. Men teachers are considered more forceful and business-like and as exhibiting leadership in a greater degree than the women.

3. On the whole, there is no great difference in the efficiency of men or women teachers as judged by the achievements in the state board examinations. The advantage, however, wherever present, is usually in favor of the women teachers. In geography and plane geometry, the women present a decidedly higher level of accomplishment.

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MAKING NOTES FROM LECTURES AND READINGS

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THE PROBLEM

THE ability to make notes is important for success in college. Every pamphlet or textbook on "Methods of Study" devotes at least some space to an enumeration of the procedures to be practiced if one is to become an expert. Attention is directed to the necessity for organizing notes, writing down full statements, making the first copy permanent, and so on. Some writers have not hesitated to say that this tool is the most helpful of all college study habits,[1] at the same time admitting that it is of but slight value in high school and very infrequently used after graduation from college.

In the course of an investigation of the relative efficiency of learning from lectures and learning from readings, the writer became interested in the problem as to which type of presentation would result in more useful notes. Students taking their first semester of university work, particularly in those states having very many small high schools, have not received extensive training in note making for either readings or lectures. Their instruction has been based largely on textbook assignments with no reference to anything similar to lectures or varied outside readings.

REVIEW OF PREVIOUS STUDIES

Two studies have already been reported dealing indirectly with this same topic. In 1928 Greene[2] stated, as an incidental observation growing out of his major problem, that the notes made on lecture materials were considerably more complete than those made on readings. The basis for his judgment was the ratings given the two types of notes in terms of their adequacy from the point of view of an outside judge. This method of evaluating notes, as was subsequently pointed out by Thompson,[3] is subject to a major criticism, namely, notes are for the convenience of the individual making them, and a fair appraisal must measure their value

[1] Jones, Edward S. (Ed.) *Improvement of Study Habits* (Buffalo: Kenworthy Printing Co., 1931), p. 19.

[2] Greene, E. B. "The Relative Effectiveness of Lectures and Individual Readings as Methods of College Teaching," *Genetic Psychology Monograph*, 4, 1928.

[3] Thompson, Lorin A. "Report on a Note Taking Experiment at Ohio Wesleyan University," *Ohio College Association Bulletin*, No. 77, Columbus, Ohio: Ohio State University.

under circumstances compatible with the purpose for which they were made. A group of independent judges might rate a particular set of notes as being very poor, but the only valid demonstration of their worth would be in terms of their use by the student who wrote them.

Thompson,[4] who was primarily concerned with a determination of the type of notes which would provide the better index of prospective academic success, employed a technique of evaluation which was not subject to the criticism mentioned above. He used some 300 students and had them make notes for a total of thirty-five minutes on both dictated and read materials dealing with very much the same topics. One week later these students took a carefully prepared objective examination over this subject matter, during which examination they were allowed to use their own notes. The objective measure of the value of these notes was the score on the test during which they were used. This technique of note evaluation was fair in view of the purpose for which the notes were made. It represented a decided improvement over Greene's practice of having an outside judge render an opinion.

Thompson did not use identical materials for notes and dictation, but a rotating experimental technique served to equate the difficulty of the two types of materials satisfactorily. The results of his study favored the notes made on dictation. The average examination score based upon this type of presentation was 38.80 with a standard deviation (dist.) of 11.84, in contrast to 35.80 with a standard deviation (dist.) of 11.52 for the reading notes. The difference of three points between these averages is sufficiently larger than its standard deviation ($S.D._{diff.} = .94$) to indicate statistical significance.

THE MATERIALS AND TECHNIQUES OF THE PRESENT STUDY

The present writer followed Thompson's plan in general, with the following exceptions:

1. The materials given one group of students as reading were identical with those given the other group in lecture form. This seemed to be the best method of guaranteeing equality of difficulty, at the same time keeping constant the matter of practice. Greene's lecture and reading materials were merely "judged" equal in difficulty while Thompson's were rendered practically so by his experimental technique.

[4] Thompson, Lorin A. *op. cit.*

2. The time between presentation and testing was increased to two weeks. Students remember more or less information after a lapse of time, whether any notes are used in the retention test or not. The writer[5] found that even after a lapse of two weeks, and with no notes whatever having been made, the average score on a surprise completion and short answer test in which guessing was not a factor was approximately 22, the maximum possible score being 39. A score on a test given after almost any length of time and for which students are allowed to refer to their notes measures retention resulting from: (a) memory of the materials presented, and (b) the contribution made by the notes. The longer the period between presentation of lectures or readings and the test the more nearly eliminated is factor (a). That the effect of memory was not entirely done away with by the interposing of a two-week period between teaching and testing is true, but its influence was at least decreased.

The subjects used in the present study were freshmen in the Teachers College at the University of Nebraska. The data were gathered during that period in an orientation course when the attention of the students was being directed to note making from both lectures and readings. Two groups were used, one of which listened to a twenty minute lecture on "Lie Detection" while the other spent the same number of minutes studying the same materials in mimeographed form. The time factor was held constant in order that a measure of the amount of learning might be in terms of the ideas retained. Inasmuch as the lecture was delivered at a rate approximating 100 words per minute, some of the students reading the material went over the ground at least twice in the time allowed. Both groups were instructed to make notes, being told that an examination would be forthcoming in which the notes could be used. These notes were then collected and not seen again by the students until two weeks later at which time they were redistributed and used in answering questions in a forty-two item semi-objective test. The reliability of this test, computed by correlating the odd against the even items and corrected by the Spearman-Brown Prophecy formula, was + .61 for the lecture and + .722 for the readings.

Table I indicates the degree in which the two groups were equated. All subjects had taken the Ohio State Psychological Examination, Form

[5] Corey, Stephen M. "Learning from Lectures versus Learning from Readings," *Journal of Educational Psychology*, XV (1934), pp. 459-470.

17 which makes available separate scores on vocabulary and reading. There were no significant differences between the groups in these respects, and the total psychological test scores were also statistically comparable.

TABLE I

STANDARDIZED TEST SCORES MADE BY LECTURE AND READING GROUPS

	Reading Group (N = 82)		Lecture Group (N = 83)			
	Mean	$S.D._{dist.}$	Mean	$S.D._{dist.}$	Diff.	$S.D._{diff.}$
Vocabulary test score....	24.16	10.95	24.52	8.91	.36	1.56
Reading test score.....	28.59	9.72	27.94	8.34	.65	5.01
Psychological score.....	90.84	32.30	90.22	32.10	.62	5.01

Inasmuch as all were first semester Teachers College freshmen, there is considerable justification for assuming, in view of the size of the groups used, that other more subtle factors were equated by chance.[6]

FINDINGS

Table II represents the mean scores for the examination administered two weeks after the original presentation of the lecture and reading materials. The notes made on the latter were better than those made on the lecture, but not significantly so. This result differs from the reports made

TABLE II

COMPARISON OF SCORES BASED UPON READING AND LECTURE MATERIALS

Reading Score (a)	27.68	$S.D._{dist.}$	5.91
Lecture Score (b)	26.02	$S.D._{dist.}$	4.22
Difference between a and b	1.66	$S.D._{diff.}$	.79

by both Greene and Thompson, although the explanation may be in terms of the greater relative lack of familiarity with note making from lectures on the part of the Nebraska freshmen. Most of them listened to their first academic lecture after matriculation at the University, which may not have been true of students coming largely from high schools in Ohio (Thompson) or New York (Greene). Another consideration which appears to support this explanation is the difference in the reliability coefficients of the same test when used to measure the value of lecture and reading notes. The corrected coefficient for the former was .61 and for the latter .72, which difference may be due either to the slightly greater

[6] Corey, Stephen M. "The Dependence upon Chance Factors in Equating Groups," *American Journal of Psychology*, XLV (1933), pp. 749-52.

heterogeneity of the reading group, or to the fact that ability to make notes from lectures was relatively less developed than ability to make notes from readings. This latter contention is supported in the study by the writer previously alluded to, in which an attempt was made to measure students' ability to understand lectures versus readings. In this study no notes at all were made by the subjects, and the examination employed was equally reliable as a measure of retention for both types of materials.

Table III compares students in both lecture and reading groups who ranked in the first and last psychological test quarters. Neither type of presentation seems to favor either the superior or the inferior students, although the size of the groups used would justify very tentative generalizations, if any. In view of the difference between the scores of the two

TABLE III

RELATIVE ABILITY OF STUDENTS IN FIRST AND FOURTH PSYCHOLOGICAL TEST QUARTERS TO MAKE NOTES ON LECTURE AND READING MATERIALS

	N	Mean Reading Score		N	Mean Lecture Score		Diff.	
First Quarter.....	24	30 71	$S.D._{dist.}$ 4 55	23	28 43	$S.D._{dist.}$ 3 75	2 28	$S.D._{diff.}$ 1 22
Fourth Quarter ...	20	25 15	$S.D._{dist.}$ 5 48	14	23 14	$S.D._{dist.}$ 3 64	2 01	$S.D._{diff.}$ 1 58

total groups as indicated in Table II, it would appear from Table III that both inferior and superior students do relatively poorer on lecture than average students.

CONCLUSION

One argument that has been used in support of the lecture is to the effect that students are able to make better notes on lectures than they can on readings, and that, therefore, they learn more from the former. The results of this study would indicate that such is not the case if other factors are kept constant. Naturally, when a student owns a textbook, and is allowed only to listen to a lecture, he is apt to feel a significantly stronger urge to make notes on the latter. If that in itself is desirable, however, the same result could be attained by allowing the students to study their textbooks only during class time—taking them up afterward. Rather voluminous notes might be expected to accumulate under such circumstances, but voluminous notes in and of themselves probably represent wasted time. Note making as a study tool, when exercised under comparable conditions, is apparently of equal value for lectures and readings.

THE READING ABILITIES OF SPANISH AND ENGLISH SPEAKING PUPILS

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BILINGUALISM and its effects upon the reading aspects of language is a problem of vital significance to education in the Southwest. Large groups of the population are bilingual, a circumstance which language teachers have oftentimes been eager to encourage. Tireman[1] has shown that the Spanish speaking children of New Mexico were 'considerably below the norm in both comprehension and rate of reading,' when measured by the Monroe Standardized Silent Reading Test. A study of a bilingual group in Arizona upon another standardized Reading Test should be of value in determining the extent of the problem of reading difficulties.

Three towns in Northern Arizona—Flagstaff, Williams, and Winslow—coöperated in a reading testing program in which the Iowa Silent Reading Tests, Elementary Forms A and B, were given during the spring of 1933. A total of 692 pupils in grades four to eight were tested, of which 303 or 43.8 percent were children from homes in which Spanish was spoken almost entirely.

The specific problems undertaken in this study were:

(1) to make a comparison of the reading abilities of Spanish and English speaking children in three school systems, and to compare the results with the norms established for the tests;

(2) to determine the particular phases of reading in which the Spanish speaking children are deficient.

The Iowa Silent Reading Tests are designed to cover a wide range of skills indispensable to the effective reading of the work-study type. The test measures four major aspects of silent reading ability; namely, (1) Comprehension, (2) Organization, (3) Ability to Locate Information, and (4) Rate of Reading. These fields are covered by six different types of tests. The Iowa Elementary Test for grades four to nine was used in this study.

Data on the total comprehension scores and the average age of the Spanish and English speaking pupils in grades four to eight inclusive are given in Table I.

[1] Tireman, L. S. "Reading in the Elementary Schools of New Mexico," *Elementary School Journal*, XXX, No. 8, pp. 621.

TABLE I

MEDIAN SCORES OF ENGLISH AND SPANISH SPEAKING PUPILS IN TOTAL COMPREHENSION ON THE IOWA ELEMENTARY (AVERAGE OF FORMS A AND B)

	Grade	No. of Pupils	Average Age	Average Grade Equivalent in Comprehension	Norm
Spanish*	4	73	11.9	3.3	4.0
English	4	64	9.6	4.2	
Spanish	5	65	12.1	4.4	5.0
English	5	86	10.7	5.1	
Spanish	6	70	13.5	5.4	6.0
English	6	82	11.6	6.4	
Spanish	7	53	13.8	6.4	7.0
English	7	53	12.7	7.3	
Spanish	8	42	14.8	6.8	8.0
English	8	84	13.4	7.9	

*Spanish is the term used to designate those pupils who speak Spanish at home. English is the term used to designate those children who speak only the English language. Children who spoke other languages were eliminated from the study.

It is significant to note that on total comprehension the Spanish speaking children are below the norm in each grade, the eighth grade being over a year below the norm. This situation is similar to that found by Tireman in New Mexico. The English speaking children are slightly above the norm in the fourth, fifth, sixth, and seventh grades. The eighth grade is very slightly below the norm.

The Spanish speaking children on the average vary from 1.1 year older than the English speaking children in the seventh grade to 2.3 years older than the English speaking in the fourth grade. Only 11 percent of the Spanish children in the fourth grade, 28 percent in the fifth grade, 16 percent in the sixth grade, 24 percent in the seventh grade, and 19 percent in the eighth grade reach the median score of the English speaking pupils in the same grade.

The Iowa Silent Reading Test is composed of five tests which measure various phases of comprehension and one test which measures reading rate. In order to discover the specific weaknesses of the Spanish speaking children, an analysis was made of the scores on the separate parts of the test. Table II presents this analysis.

In the fourth grade the Spanish speaking children are consistently below standard in every phase of reading ability measured by the Iowa Silent Reading Test. The English speaking children are average or above in all phases except in the Selection of Central Idea. In the fifth grade the Spanish speaking children are below in all phases, but more nearly approach the Norm in Paragraph Comprehension. The English speaking

TABLE II

MEDIAN GRADE EQUIVALENT OF ENGLISH AND SPANISH SPEAKING PUPILS ON VARIOUS PARTS OF IOWA ELEMENTARY READING TESTS (AVERAGE OF FORM A AND B)

	Paragraph Comprehension	Vocabulary	Selection of Central Idea	Reading of Sentences	Location of Information	Reading Rate
Fourth Grade						
Spanish	3.0	3.0	3.0	3.3	3.6	3.6
English	4.0	4.0	3.9	4.2	4.0	4.2
Norm	4.0	4.0	4.0	4.0	4.0	4.0
Fifth Grade						
Spanish	4.7	4.5	3.8	3.5	4.4	3.9
English	5.2	5.2	5.1	4.7	5.2	6.4
Norm	5.0	5.0	5.0	5.0	5.0	5.0
Sixth Grade						
Spanish	5.9	5.4	4.9	4.6	5.3	5.4
English	7.0	6.2	6.1	6.5	5.9	8.2
Norm	6.0	6.0	6.0	6.0	6.0	6.0
Seventh Grade						
Spanish	7.2	6.6	5.4	5.5	5.9	6.4
English	7.4	7.1	6.4	6.8	7.7	6.8
Norm	7.0	7.0	7.0	7.0	7.0	7.0
Eighth Grade						
Spanish	7.2	6.9	6.2	6.2	6.4	6.0
English	8.0	8.7	6.9	8.2	7.8	10.0
Norm	8.0	8.0	8.0	8.0	8.0	8.0

of the fifth grade, are above in all phases except in the test of Sentence Meaning. In the sixth grade the Spanish speaking pupils practically reach the norm in Paragraph Meaning, but in other phases they are deficient. In the seventh grade the Spanish speaking pupils are above the norm in Paragraph Meaning but below in the other tests. The English speaking children in the seventh grade are below in the ability to select the central idea of a paragraph and the reading of sentences, but above in all other phases of reading. The Spanish speaking pupils in the eighth grade are below the norm in every test.

Table II reveals the fact that the deficiencies of the Spanish speaking children are not confined to any one phase of reading ability. The problem of correction is one in which all phases of the reading ability will need to be improved rather than one in which a few deficiencies can be removed. The analysis of the scores on this reading test reveals a serious problem in educating the Spanish speaking pupils. It is well recognized that a deficiency in reading is very apt to have a corresponding influence in other subjects, such as history, geography, science, and literature, hence the problem actually becomes more acute than if the deficiency were in other subjects.

METHODS USED IN PREPARING MANUSCRIPTS FOR PUBLICATION IN PSYCHOLOGY AND EDUCATION

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PURPOSE

THIS brief study was an attempt to learn the methods which prominent writers in the fields of psychology and education use in preparing their manuscripts for publication.[1]

PROCEDURE

Obviously, the only way to gain this information was to ask for it. While realizing that the questionnaire is in disrepute, the writer justifies her procedure by a statement from Kelley: "... until experimental science relieves us of the need of human judgments, or removes from our minds an interest in unique events, this wayward child of science (the questionnaire), feeble as it is, will remain an indispensable helper."[2] The questionnaire used in this study was sent to sixty outstanding psychologists and educators, who have written extensively and are otherwise prominent in their respective fields.[3] Forty-four replies were received, some of them being elaborate explanations of the author's procedure.[4] The frequency of requests for reprints of the study indicates that authors themselves are interested in the methods used by other authors.

RESULTS

1. The first question was, "How carefully do you first outline what you are about to write?" Fifteen[5] answered, "carefully." "I find that

[1] Numerous publications have appeared which concerned the form of manuscripts appropriate for publication. One of the best was developed in 1928 by a committee (and later adopted by the conference) of Editors and Business Managers of Anthropological and Psychological Periodicals. It was later published in the *Psychological Bulletin*, February, 1929, under the title "Instructions in Regard to the Preparation of Manuscripts." This present study does not concern the form so much as the actual procedure of preparation.

[2] Kelley, T. L. *Scientific Method* (New York: Macmillan Company, 1932), p. 74.

[3] The list of sixty names was made up by the writer with the advice of a psychologist and an educator. There was no practical advantage in extending it beyond this number, as all the really outstanding authors of both fields were already included.

[4] In only two instances was the writer criticized for making a questionnaire study, and one of these was directed at the type of question used—"This questionnaire can be answered by 'yes' and 'no' and is therefore practically worthless. You will not achieve anything worthwhile by such methods. Study the method of making a questionnaire before submitting it." (Another said, "I like your type of questionnaire. Send me a reprint of your article.") A psychologist added a postscript that he could "get more work done if it were not for questionnaires like this one."

[5] In some cases all the questions were not answered, and in others, the answers were too ambiguous to be classified.

a carefully prepared outline is a great aid in writing." "More carefully than turns out to be worth while afterwards." "I give considerable attention to outlining a report before I begin to write it." "I outline very carefully and then study and develop the various items." "I outline several times independently on successive days, each more detailed than the preceding." Twenty-three admitted that they make only sketchy outlines. "Only my main points are segregated and placed in sequence." "I outline very roughly—just a few main heads." "A very general, rough outline." Two claimed that they make *no* outline at all. "I seldom if ever make a written outline of any manuscript." "Usually I have a general outline in mind but not on paper."

2. The second question was, "Do you write the first draft by hand, typewriter or dictation?" Twenty-nine answered that they write the first draft by hand. "I write the first draft of all articles, addresses and books by hand." "I formerly wrote the first draft on the typewriter. Now I do it by hand in pencil." "I invariably write the first draft by hand." Six said they use a typewriter for the first draft. "Usually by typewriter." "By typewriter when I know what I want to say." Four dictate the first draft.[6] "I prefer to dictate the first draft, and find the ediphone most satisfactory." Several said that they use more than one plan. "I typewrite that material which flows easily, and write by hand that which is laborious to think out."

3. In answer to the third question, "Do you revise by hand, typewriter, or dictation?" thirty-seven said by hand, four by typewriter, and none by dictation.

4. The fourth question was, "How long after you write the first draft do you revise it?" Twelve said that they revise at various intervals, and they have no preference. "Whenever I feel like it." "Whenever conditions permit." One revises immediately. "I revise as I go along. I have never yet rewritten anything at a later date." Eight revise within two days. "In about a day or two. I never like to revise immediately." Twenty prefer the lapse of longer time. "For finished work the longer the better." "Several months should elapse to give the best results." "I prefer the lapse of two months or more." "I revise repeatedly as

[6] This was the problem which originally suggested the investigation. A fellow graduate student attempted to write his dissertation by dictation. The question arose, do outstanding authors who are busy with many interests, dictate their material or use slower and more laborious methods? It was found that the four authors who dictate publish material of a more or less reportorial type. Little of their writing is interpretive or philosophical.

there is time." "The first draft should 'get cold' before trying to revise it." "I prefer to let the first draft lie fallow; but who can do it these days."

5. The fifth question was, "Do you read your material aloud in revising it?" Ten answered, "Yes" and thirty, "No." "I always read my material aloud before it is typed." "Reading aloud enables me to improve sentence structure." "I never read my material aloud."

6. The sixth question was, "Does your first draft contain all your research evidence, or is it more sketchy?" Twenty-one said that they make the first draft as complete as possible. "It is as complete as I can make it at the time." "I never write until I am thoroughly ready, and then rapidly and finally." "All. I then eliminate later." "I try to get it all in. In revision a lot of stuff is transposed to make it systematic." "I include everything. The second draft is usually in the form of condensation." Fourteen make the first draft more sketchy. "The first draft is just a bird's-eye-view." "Just the general idea."

7. To the seventh question, "Do you have some one else read and criticize your written material before publication?"—twenty-four said "Yes," nine said, "Occasionally" and ten said, "No." "Yes. By several persons of different types." "Yes—a seminar if possible." "No, the editors are critics enough."

8. The eighth question was, "Do you check the accuracy of all references and quotations on your final draft?" Thirty-eight said, "Yes." "All references and quotations are carefully checked on the final draft and also on the page proof." "Yes—check and recheck." Three said, "Sometimes." "Most of them, but I won't kill myself checking the few which are hard to get hold of if I have reasonable belief in their accuracy." Two answered no. "It is too much trouble." "I am reasonably careful when I copy the quote."

9. The ninth question was added to the last twenty questionnaires sent out. It was, "Do you get permission to use all quoted material?" Of the eighteen answers, ten said, "Yes." "Invariably." "Always." Four said that they did for long quotations but not for short ones. Three said, "No." "No. What is publication for, except to make our ideas available to others?" One said that it "depends on the source."

10. The additional comments requested were varied. One author, who is also an editor, advises writers to put a "summary or conclusion at the end of a manuscript. Often this discloses some omission (something in mind but not on paper) or suggests some improvement in order

or manner or presentation." Another believes that "young writers need practice, expert criticism, and more practice." A prominent textbook author adds, "Do not follow the advice of English teachers to make an outline, because it leads to stilted writing." However, another says, "Get a standard book on the subject and read it." Perhaps the most appropriate advice was, "Find what method works best for yourself and stick to it."

CONCLUSION

To those who have been trained in formal methods of preparing written material, some of the answers to the above questions sound ridiculous. However, coming from eminent authors, the conflicting replies indicate that specific rules for writing are appropriate only for certain writers in certain situations. There is no generally accepted procedure for preparing manuscripts for publication.

What implications, if any, the above results have for the various interpretations of thinking, the writer will not venture to suggest. It is perhaps significant that in most cases profound ideas are developed by handwriting, although one author advises that "all thinking should be done before beginning to write." It may be significant also that most authors allow extended intervals of time to elapse before revising their material. Certainly the returns signify the fact of individual differences.

A DISCUSSION OF THE SIX, SEVEN AND EIGHT YEAR LEVELS OF THE STANFORD-BINET SCALE

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IN the April issue of *School and Society* Stuart M. Stoke[1] discusses his findings concerning the performance of seven-year-old children in the Stanford-Binet Scale. Mr. Stoke's data concur in the main with the results of a study previously made by Richard Madden.[2] These two writers agree that there might well be a revision in the eight- and nine-year-levels of the Stanford-Binet Scale.

These two articles stimulated the writer to examine the records of the performances of certain five-year-old children in the Stanford-Binet Scale to see what variations exist in the lower age levels. This scale was given by members of the Department of Psychological Examinations of the Buffalo Public Schools for the purpose of selecting entrants for the primary department from a number of children who had had kindergarten training but were too young, chronologically, for enrollment in first grade. Some of these children were, in the opinion of their teachers, mentally, physically and socially ready for first grade. Others were, in the opinion of their parents, equally ready to enter this grade. The chronological ages of these children range from five years and no months (5-0) to five years and seven months (5-7) with the median age five years and five months (5-5). The mental ages range from four years and ten months (4-10) to eight years and two months (8-2) with a median mental age six years and four months (6-4). The I.Q.'s range from 88 to 154 with the median I.Q. 117. Children of all sections of the city are included in this particular group. Racially and economically the group is heterogeneous. The records of 254 children were available for examination. The following diagram shows the paired chronological and mental ages of the 254 children and the total number of children for each age group.

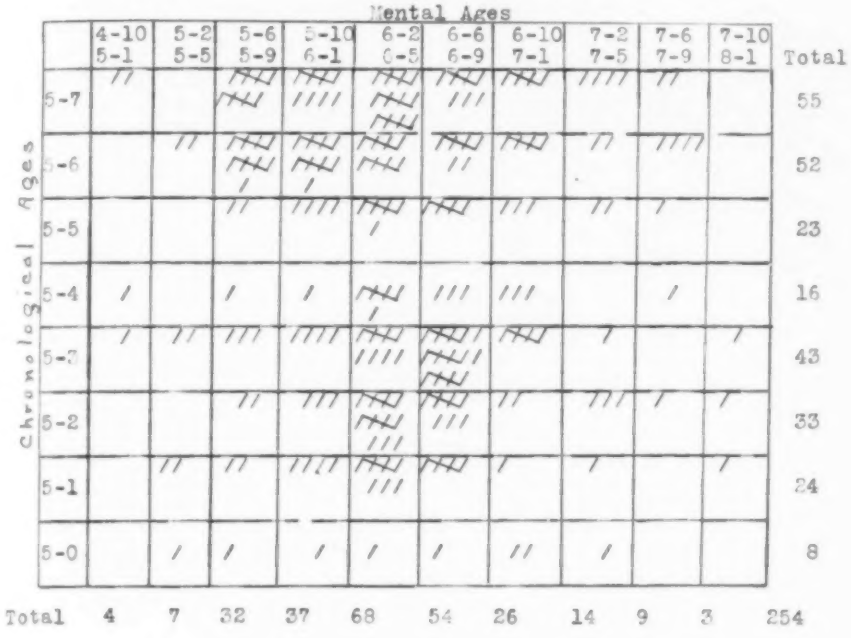
Table I shows the percentages of successes for each year of the Stanford-Binet from five through eight. Since only eight children failed one or more tests at the four-year-level and twelve children were successful

[1] Stoke, Stuart M. "The Eight and Nine Year Levels of the Stanford-Binet Scale," *School and Society*, XXXVII (April, 1933), p. 459.

[2] Madden, Richard. "A Note on the Eight and Nine Year Levels of Stanford-Binet," *School and Society*, XXXVI (October, 1932), p. 576.

DIAGRAM I

THE RELATIONSHIP OF CHRONOLOGICAL AGE TO MENTAL AGE



beyond the eight-year level, the percentages of successes for the fourth-year and for the ninth-year have not been considered in this study.

TABLE I

PERCENTAGES OF SUCCESSES MADE BY FIVE-YEAR-OLD CHILDREN ON EACH TEST OF THE STANFORD-BINET SCALE FOR YEARS FIVE THROUGH EIGHT

Test No.	Percentages of Successes Based on 254 Cases			
	Year 5	Year 6	Year 7	Year 8
1	99	74	34	19
2	93	78	72	3
3	97	75	48	28
4	98	82	65	30
5	85	69	49	26
6	93	52	25	3

The low comparative percentage of success, Test 5, Year 5, may be due to the fact that the time element in this test plays so important a part in the success or failure of the performance. Test 6, Year 6, and Tests 1

and 6 in Year 7 seem to be farther removed from the experiences of five-year-olds than the other tests of these years. Tests 2 and 6 in Year 8 seem to present greater degrees of difficulty for these five-year-olds than the other tests of this year.

For this group of five-year-old children Test 2 in Year 7 is easier than Tests 5 and 6 in Year 6 and Test 4 in Year 7 is easier than Test 6 in Year 6. Tests 3, 4 and 5 in Year 8 are somewhat easier than Test 6 in Year 7. Specific training in shoe-tying is given to the kindergarten children of this city. An appreciation of pictures and the ability to express this appreciation are also developed. Apparently the specific training that these children receive is of advantage to them in the performance of Tests 2 and 4, Year 7, of the Stanford-Binet Scale.

It is possible that another group of children of the same chronological ages would not have the same percentages of successes as this selected group of superior children have. These data seem to indicate that certain tests in Years 6, 7 and 8 might well be interchanged or replaced with other tests that are not so closely connected or associated with the activities of the school.

These findings may be of some value to the authors in making a revision of the Stanford-Binet Scale which is such a very valuable clinical tool for those who are interested in measuring the mental ability of children.

A DEVICE TO FACILITATE THE SCORING OF TESTS

H. T. Manuel and James Knight
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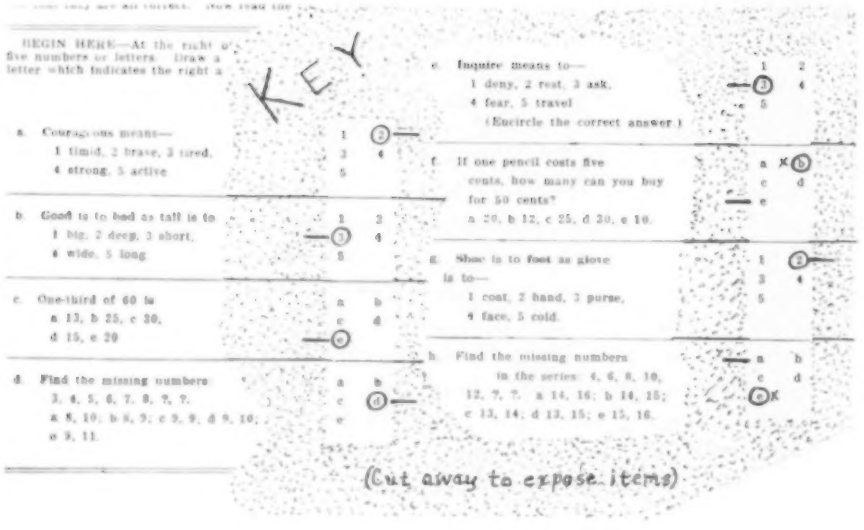
In the development of standard tests during the last few years considerable effort has been made to reduce the time and effort required in scoring. Usually at least two operations are necessary—(1) determining the correctness of the answers given by the pupils and (2) counting those that are correct. Commonly keys are used to assist in the first of these operations. In general, improvement has been in the direction of reducing the attention which has to be given to the content of the answers and improving the form of the test paper or key. It is easier, for example, to compare one-place numbers on a key with similar numbers on a test blank than it is to compare words with words, and easier to follow the answers if they are all placed in a vertical column than if they are scattered over the page.

Sometimes, indeed, keys have been eliminated through the use of devices by which the correctness of the pupil's response is indicated automatically, as by the use of a carbon or a perforating stylus or by running the answer sheets through a printing press to block out the incorrect answers. It is then necessary only to count the answers which appear in certain easily identified places, as for example in the only squares which appear on the reverse side of the sheet. While these devices greatly reduce the labor of scoring, there are certain disadvantages of expense and in some cases of patent restrictions.

The purpose of this brief note is to describe a device which has been developed by the writers in collaboration with their students. While it utilizes a key, it eliminates attention to the content of answers and requires only that the scorer count the responses which lie opposite certain marks. The accompanying illustration[1] shows the scoring stencil superimposed upon the pupil's test blank. The scorer merely counts the circles that lie opposite the short horizontal lines. In this arrangement only two vertical columns are used for five-response items. The elements of this device are not at all new; the novelty (if any) consists in the particular way in which familiar elements have been combined, a combination which the authors have found to go far toward reducing the time and effort of scoring.

[1] From an experimental edition of a *Scholastic Aptitude Test for High School and College* by H. T. Manuel, James Knight, Woodie Mae Anderson, Edna Mae Boles, J. A. Floyd, and R. C. Jordan.


BEGIN HERE—At the right of five numbers or letters. Draw a letter which indicates the right a
KEY
a. Courageous means—
1 timid, 2 brave, 3 tired,
4 strong, 5 active
b. Good is to bad as tall is to
1 big, 2 deep, 3 short,
4 wide, 5 long
c. One-third of 60 is
a 13, b 25, c 30,
d 15, e 20
d. Find the missing numbers
3, 4, 5, 6, 7, 8, ?, ?.
a 8, 10; b 8, 9; c 9, 9; d 9, 10;
e 9, 11.
e. Inquire means to—
1 deny, 2 rest, 3 ask,
4 fear, 5 travel
(Encircle the correct answer.)
f. If one pencil costs five cents, how many can you buy for 50 cents?
a 20, b 12, c 25, d 30, e 10.
g. Shoe is to foot as glove is to—
1 coat, 2 hand, 3 purse,
4 face, 5 cold.
h. Find the missing numbers in the series: 4, 6, 8, 10, 12, ?, ?. a 14, 16; b 14, 15; c 13, 14; d 13, 15; e 15, 16.
(Cut away to expose items)

EDITORIALS

PRINCIPLES VS. PATTERNS OF TEACHING

THERE are two almost universally employed, but yet very different approaches to the problems of classroom instruction to which the student of educational problems should be alert. The one approach is made from observed uniformities, principles, and generalizations and the other through patterns of teaching, techniques, and teacher activities. In the one instance one attempts to define the constituents of good teaching by indicating the characteristics common to a number of good teaching situations, such as, adherence to the laws of distributed practice, exercise, and effect, or the principle of individual differences; in the second instance, one attempts to define good teaching by indicating appropriate patterns of teaching, such as, the unit contract method of instruction, the project method, etc., techniques for performing this and that aspect of teaching, and the many specific activities involved in teaching. While patterns of teaching, techniques, and specific teacher activities are not synonymous terms they do serve the common purpose of indicating as precisely as possible the things to be done in specific teaching situations.

Each of these approaches to teaching has its specific advantages and disadvantages. The great advantage of the technique approach to teaching is that it is definite. It furnishes the teacher with assistance that indicates precisely what is to be done in particular teaching situations, and the teacher does have to do something very specific about each of these many situations which arise in teaching. The great difficulty with this approach to teaching is that the specific situations to be dealt with are so numerous. As a matter of fact, in many respects each situation is unique. With this thought in mind, how does one know then what to do? One may, of course, turn to the so-called typical situation. This is, of course, helpful but there are no typical situations and this approach leaves a very large unoccupied area of specific situations about which something must be done. The so-called generalized pattern of teaching is really a very specific pattern of activities assumed to be equally effective with all teachers, pupils, and situations. To the degree that each teaching situation is unique, the teacher's choice of procedures depends,

upon her purpose, the pupils taught, the subject matter, the teacher herself: her training, experience, and special capacities, the available materials: textbook, supplies, and equipment (these vary greatly from one school system to another) and the socio-physical environment in which the learning takes place. There is a tremendous amount of lost motion in teaching arising out of the attempt of educational pattern makers to treat all teachers, pupils, and teaching situations as if they were alike. The techniques of teaching are the tools of teaching and each should be chosen for the purpose which it is to serve. As with all tools they are most helpful when they serve the particular purpose for which they are chosen.

Important as these techniques of teaching are for the classroom teacher, because of their numerousness, when one attempts to anticipate them, as one does in the training of teachers, one finds himself lost, or swamped by the magnitude of the task. Largely because of this fact many persons find that the only practical approach to teaching will be found in the development of the principles of good teaching. Principles of good teaching may arise from custom and tradition, from one's own personal experiences, and from history, science, or philosophy. Aside from their source, they have the common purpose of supplying the teacher with a vehicle by which the experiences with past situations may be brought to bear upon present and future situations. Thus the importance of principles.

This approach is subject, however, to two particularly disturbing limitations. First, valid as the principles of good teaching may be, they are not techniques, and they do have to be translated into techniques before they can be applied. How then may one verify these applications? One may validate the principles of good teaching by already well-established techniques of research, but how is one to validate the applications? In the second place, the principles of teaching are of varying universality. The principle of individual differences, for example, appears to be universal. The principle of distributed practice, on the contrary, appears to be of limited universality. As a matter of fact, when one recalls that while distributed practice was on the average superior to concentrated practice, there were many individual exceptions to this rule. Many principles, therefore, true in general, are not necessarily true for particular teachers, pupils, and classes. The approach through principles leaves, therefore, large unoccupied areas of application.

The dilemma in which one finds oneself is particularly disturbing when one attempts to evaluate some particular segment of teaching or when one wishes to choose one's own teaching procedures according to the conventions of science or philosophy. The teaching that one does or observes is always composed of specific teacher and pupil activities, materials, and conditions. What are the criteria by which one judges these or chooses what to do? How does one then bridge the gap between theory and practice? This is the teacher's everyday problem. This problem is at the foundations of all attempts to measure teaching ability. It is also inherent in all programs for the training of teachers. Is there any very fundamental conception of this issue in programs for the training of teachers? This problem also arises, for example, when one studies experimentally the relative merit of the unit contract and the project methods of teaching or the distribution of practice. While one may judge from the literature of education that it is generally recognized that there are principles and patterns of teaching, the full import of these different approaches to the problems of instruction appear not to be fully realized.

A. S. Barr

PUPILS AS PERSONALITIES

Just that many self-conscious individuals as there are pupils face the school teacher. Each of these personalities is to be guided as one of an active group, all of whom have tendencies and abilities for common purposes, in union with others to increase knowledge, and have capacities to understand the value of coöperative work.

The value of skill in physical activities is one of the natural appreciations of many which may be developed for most of the pupils. It is largely attained by self-directed experiences but needs organized understanding of the ways and means and enthusiasms for effective self-training.

The value of intellectual attainment is recognized and, within the range of mental abilities, a beginning has been made with the opportunities for direct experiences of the pupil. To maintain these impressions of value, suggestions of coöperation, and the demand felt by each person for wider appreciations, requires an art as well as a skill of instruction.

When in the above paragraphs the appreciation of training and of knowledge as values to the self, in anticipation of future use, is recog-

nized as a direct experience of the personality as a whole, it seems evident that education is concerned not with mental aptitudes alone but even more vitally with the fundamental attitudes of personality.

This does not mean that education is to create attitudes, for the reverse is probably nearer to the process. It is in a clearer understanding of personality through its attitudes that a successful education may be created. To appreciate this situation, it is necessary to understand the term personality as a fundamental concept of scientific thinking and of psychology as it deals with the whole as a unit, the functions of which are not derivable from the sum of the parts of this whole.

The functioning whole of personality is conceived as the reacting element in life having common attitudes toward fellowships with the other personalities of a body politic. This reacting energy is in itself a constant experience of the responsible self-consciousness belonging to personalities. This energy is evidenced in the direct *appreciations* of certain relations as true or beautiful, and in the *anticipation* of good from continued purpose toward that end. Such continuous action of energy may appear in the content of consciousness only as the urge of an ideal for greater skill, more knowledge, and a better organization of understanding. The ideal represents an attitude of personality. In this way it aids the functioning of the mental action of the individual person and so contributes to the functioning of the personality in the social whole. The school may in this way stimulate self-training, effective study, and wise means toward true judgments. It has been objectively demonstrated that education, which brings the power of an ideal into action, carries the attainment over to other fields of action with little added direction of training.

The great advantage which a clear understanding of the interaction of personalities may give to education is found in the opportunities for creative work by pupils. The attitudes of self consciousness tend to reconstruct a mental content of experience on a new pattern. A situation, constructive, or dramatic, or idealized needs that form of expression by each pupil which his attitude and mental content suggest. To do this each seeks a satisfying mastery of the organization of the needed knowledge and of a way to perfect skills. The ideals of clearness, definiteness, and completeness develop in good creative work, and carry over and give a new impetus to learning which the teacher can direct up to the mental age ability of the learner.

G. A. B. By An Observer

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

DRANSFIELD, J. EDGAR. *Administration of Enrichment to Superior Children in the Typical Classroom.* Contributions to Education, No. 558 (New York: Bureau of Publications, Teachers College, Columbia University, 1933), pp. v + 107.

It is not necessary to point out the numerous arguments that children with superior mental ability suffer seriously in our schools by drifting along far below their maximum of accomplishment. In the introduction to his book the author presents briefly and clearly his problem—How can the regular classroom teacher administer an enriched curriculum to superior children? He points out various plans that have been attempted through differentiation of the work of pupils of varying ability, such as the adaptation of teaching method, the minimum essentials for the slow, additional work for the brighter, and still more work for the brightest group. He discusses the general attitude toward skipping grades by bright pupils and special classes for bright pupils. He passes these for another plan with which he experiments. His experiment involves enrichment administrable by the regular classroom teacher by means of "instruction units." Superior children are left with their regular class, their surplus time given over to individual study and reading on these special units under the guidance and direction of the teacher.

Two groups of pupils were chosen and matched as nearly as possible by means of reliable intelligence tests and achievement tests. All of the pupils had intelligence quotients of 110 or more. The pupils of the experimental group were exposed to an enriched program by the regular classroom teacher. The control group went on with the work in the usual way. Both groups were tested at the beginning and at the end of the experiment by a battery of tests to reveal attainment and progress.

The pupils in the experimental group were released from classroom work a portion of the time, the amount of time being determined by how far each one was in advance of his grade as shown by the achievement test. Each pupil thus released was assigned a self-administering instruction unit of enrichment. Each of these units was complete in itself, contained self-administering check tests, provided directions, activities, notebook exercises, objectives, guiding questions, and suggested allied subjects for further study. The pupils were permitted to work on the unit at all odd times available in the school and out of school. The teacher supervised, guided and encouraged the pupils in the enrichment work. The experiment was carried on in different schools and in different grades from third to seventh, over a period of approximately one semester.

After examining the evidence the

author concludes that the experimental pupils had an appreciable advantage in advancement over the control pupils. In addition to the actual advancement, he feels that there was improvement in interest and in habits of work, in initiative and independent study by the pupils. Possibly teachers were also inspired to better teaching methods. All told he believes that if bright pupils generally have a chance for improved and enriched work, it can come best through the regular teacher in the regular classroom by means of a number of enrichment units covering many fields of learning and vocations.

One of the very interesting sidelights of the experiment was the greater effectiveness of these self-administering units among children of the lower grades. Quite uniformly pupils of the third grade advanced more rapidly and more systematically than did pupils of the upper grades. The author concludes that it is better for enrichment to begin early in the grades.

While this experiment is not conclusive and the author wisely makes no such claims, he has furnished some important evidence and has pointed the way for further experiment and further effort toward a better solution of the important problem of administering the enrichment of the course for bright pupils. Educators are unanimous in their feeling that something should be done for the more effective education of bright pupils in our public schools. Dr. Dransfield has made a worth while contribution in this field.

VIRGIL E. DICKSON
Berkeley Public Schools

STEVENSON, GEORGE S., AND SMITH, GEDDES. *Child Guidance Clinics: A Quarter Century of Development* (New York: The Commonwealth Fund, 1934), pp. vii + 186.

The history of child guidance clinics has been well-presented and summarized. The rise of the clinics over a twenty-five year period has been presented and several chapters are offered on the status of the clinics today, including as chapter heads such topics as "The Present Pattern," "The Selection of Cases," "Clinical Services and Procedures," "The Clinic in the Community," and "Trends and Possibilities."

The pioneer work of the early clinics offers a great deal of stimulation and encouragement to those who find themselves now working in such agencies where the tradition which was lacking in the early days is beginning to offer aid and encouragement. In the early clinic programs the limited staffs were immediately overwhelmed with demands for services many times more than they could fill and the attempt to carry a too heavy case load tended to defeat the real purpose of the demonstrations. The staffs seldom had opportunity to develop an effective salesmanship of the clinic values to the appropriating bodies in the various communities.

In the report dealing with the present status of the clinics the authors very frankly present the difficulties which are still inherent in child guidance work. Such factors as the long-time program needed for certain types of children and the impatience of the interested parties in expecting immediate results, the very illusive and subtle nature of the treatment which to the lay person seems quite remote from the behavior symptoms which the children disclose, and other problems are clearly and yet forcibly presented. Their statement on page 154 is typical: "Everyone who works with children needs

to know more about the detriments of behavior. The clinics have done something to increase this knowledge, but it will take sharper thinking, more deliberate planning for research, and closer coördination between different groups of investigators than one sees today to maintain a genuinely scientific attitude in a field where it is so difficult to check results."

Although it is evident from this study that progress has been very slow in the development of child guidance work, one feels that some rather careful foundations were laid by the investigations that were reported in this volume and that the authors have really treated in a very convincing manner the data which were meager and most discouraging in the early days of this pioneer work. In dealing with problems in the mental and emotional realm specific results and changes cannot be determined with such finality and accuracy as can experiments in the field of physics, chemistry, mechanics or electricity, yet the time must come when the advancements in the former fields must be recognized as of much importance as changes in the latter.

HARRY J. BAKER
Detroit Public Schools

DAWSON, SHEPHERD. *An Introduction to the Computation of Statistics* (London: The University of London Press, Ltd., 1933), 192 pp.

This book gives formulae for a number of statistics, and each formula is followed by an example giving the arithmetical detail involved in calculating that statistic. The derivations given require a mathematical background of algebra (including the binominal expansion), and maxima and minima in calculus. Exercises in computing the various statistics are given at the end of each chapter. There is a bibliography of 59 titles.

The first three chapters deal respectively with the usual topics of tabulating and graphing data, measures of central tendency, and measures of dispersion (including methods of computing and using B_1, and B_2 measures of skewness and kurtosis). Chapter IV discusses sampling. It gives a very good treatment of the normal curve, beginning with simple examples of coin tossing and continuing with the binomial expansion. Methods of fitting a normal curve to data, and of comparing an observed distribution with the normal are given. There is also an excellent discussion of the significance of the differences of means and of standard deviations. The presentation is very clear, and the accompanying diagrams should give an adequate understanding of the correct interpretation of "signficance" and the assumptions involved in calculating it. Fisher's methods for small samples are also given and illustrated. Several different forms of the Chi square test are presented and illustrated with data and computations.

Chapter V is a discussion of many different measures of correlation, including eta, partial and multiple correlation and correction for attenuation. The formulae for the standard error of each measure are given, and also the transformation from the correlation coefficient to Fisher's "z." There is, however, no mention of analysis of variance. The chapter is valuable as a manual of computation for the advanced worker. However, the discussion of the meaning and interpretation of the statistics is inadequate for the beginner; for example, the interpretation of correlation by means of the coefficient of alienation is not mentioned. Dangers in the interpretation of partial correlation are not discussed. In

this last chapter the author seems to rely on his belief, expressed in the preface, that "the calculation of statistics is a matter of mere arithmetic, and an understanding of their general significance requires little more than common sense." The reviewer can agree that a knowledge of "higher mathematics" may not be necessary; but, it is necessary to be thoroughly acquainted with the scientific field involved, to know possible errors in interpretation of statistics, and the basic assumptions underlying the formulae used. While one should never ignore "common sense" considerations in interpreting data, it is far from true to say that the accurate interpretation of statistics "requires little more than common sense."

The formulae given are practically free from typographical errors. Two errors were noticed and may be mentioned here. On page 52, s^2 should have been defined as the "*mean*" of the squares of the variates, instead of the "*sum.*" On page 111, the standard error of σ should be given as

$$\frac{1}{\sqrt{2n}}\sqrt{\frac{\mu_4 - \mu_2^2}{2\mu_2}}, \quad \text{instead of as} \quad \frac{\sigma}{\sqrt{2n}}\sqrt{\frac{\mu_4 - \mu_2^2}{2\mu_2}}$$

The alternative form of the equation for the standard error of σ given on the same line is correct.

According to the publishers, the book is intended for "the use of laboratory workers, students of psychology, physiology, biology, medicine and education." For this purpose the first four chapters are well-written, in the same sense that a novice in statistics (who had the necessary mathematical background) could work through these chapters with relatively little help and have an adequate understanding of the use and proper interpretation of the statistics discussed. The fifth chapter gives many useful formulae, but does not deal adequately with the use and interpretation of measures of correlation.

HAROLD GULLIKSEN
University of Chicago

RANKIN, PAUL T., CHAIRMAN. *Scientific Method in Supervisory Programs.* Seventh Yearbook of the Department of Supervisors and Directors of Instruction, National Education Association (New York: Bureau of Publications, Teachers College, Columbia University, 1934), pp. xiii + 194.

This most recent of the series of yearbooks published under the auspices of the Department of Supervisors and Directors of Instruction contains a comprehensive overview of the principles that underlie the application of scientific method in supervisory programs. The volume was prepared by a group of experts in various phases of supervision each of whom wrote a section of the yearbook. Despite the fact that the book is the work of numerous individuals, it is a coherent, well edited treatise with practically no duplication or overlapping of treatment.

The committee defines scientific method by describing its characteristics as follows: "(1) basis on facts, (2) quantitative description of facts, (3) suspended judgment, (4) concern with all relevant facts, (5) sensitiveness to problems, (6) effort to discover rather than to prove, (7) continuous appraisal, (8) the quest for ever more inclusive generalizations." (4)

The committee then proceeds to discuss the application of scientific techniques to various aspects of supervisory programs. Six major functions of supervision are

listed: "(1) study of the pupil, (2) training of teachers, (3) conduct of curriculum investigations, (4) preparation and installation of courses of study, (5) selection of text books and preparation of materials of instruction, (6) conduct of a public relations program." (32)

In the yearbook there are single chapters devoted to the discussion of each of these functions except the sixth which is discussed only incidentally.

In addition to the chapters dealing with the discussion of the functions of supervision, there are separate chapters devoted to the description of techniques of planning the supervisory program including supervisory organization and methods of appraising instruction.

Throughout the yearbook the committee has limited its descriptive material to well selected illustrations of the technics that are discussed. References are in some cases given in footnotes to other illustrative materials. The committee also points out that suitable technics for applying scientific procedures to some of the supervisory functions are in many instances lacking. The suggestion is made that "supervisors ought to address themselves to the problem of discovering or inventing ways of utilizing the method of science as far as may be in *every* supervisory act." (VIII) "Supervisors ought to make sure that they are using all the scientific procedures that have been devised to apply to various supervisory activities." (IX)

This yearbook presents the first discussion of all major aspects of a supervisory program that the Department has prepared. The point of view is highly professional. The approach is clearly presented. One could not wish for a clearer statement of some of the issues that arise when a definite attempt is made to apply scientific methods in dealing with the problems of human relations. This yearbook should serve as a rating profile which will enable every supervisor to scrutinize his techniques critically. The procedures that are suggested describe technics that are of demonstrated worth. Their application should greatly increase the efficiency of supervision. The demonstrated necessity of inventing new and essential technics in the many phases of supervisory activity presents a real challenge to all supervisors.

This book also will serve admirably as a core about which to organize the study of literature in the field of supervision.

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RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

ANDERSON, F. H. "On Interpreting Locke," Reprint from the *University of Toronto Quarterly*, IV (July, 1935), pp. 324-333.

While Locke is difficult to interpret, this writer finds his political doctrines have passed into constitutional practice and his theory of knowledge has become commonplace. He broke from much of the tradition of his time in order to meet a broad and deep social need through a searching analysis of human understanding.

"Bibliography of Studies of the Home Economics Curriculum" (Washington: Department of the Interior, Office of Education, Bulletin 179, 1935), 70 pp.

This bulletin gives an annotated bibliography of studies made in 1926-1934. Materials are classified under: adult education, college, elementary school, secondary school and miscellaneous. There are 404 titles indexed by author and subject.

CAMMACK, JAMES W., JR. *Protecting Public School Funds in Kentucky* (Lexington, Kentucky: University of Kentucky, June, 1935), 216 pp. Bibliography.

Decrease in available funds accentuate the ever-present problem of guarding school money. The bulletin gives an historical review of legal safeguards and statistical presentations by districts. Funds were found to be more safely guarded in county than in city districts. Bonding of officials and improved accounting were recommended as of chief importance. Among the recommendations were the more general of audits, regulations pertaining to penal sums and better provision for sinking funds.

CARR, WILLIAM G., AND OTHERS. *The Teachers Economic Position*, Research Bulletin of the National Education Association (Washington: National Education Association, 1935), 267 pp.

This bulletin contains material upon the general scope and procedure of the study, basic facts concerning the teachers coöperating in the investigation, sources and uses of teachers incomes, financial assets and liabilities of teachers, case reports of teachers' economic status, changes in the cost of living with reference to teachers salaries, incomes of teachers and other occupational groups, improving the economic status of teachers, and a general summary and recommendations.

CARR, WILLIAM G., AND OTHERS. *The Application of Research Findings to Current Educational Practices:* Official Report of the American Educational Research Association, Atlantic City, New Jersey, February 23-27, 1935 (Washington: American Educational Research Association, 1935), 269 pp.

This bulletin contains abstracts of papers presented at the Atlantic City,

New Jersey, 1935 meeting of the American Educational Research Association.

CHAMBERLAIN, LEO M. *A Survey of the School Organization and School Plant of Powell County, Kentucky* (Lexington, Kentucky: University of Kentucky, 1935), 65 pp.

The author presents a survey of the school organization and school plant of Powell, Kentucky, discussing the present educational program, an immediate program, and possibilities for a long time program.

CHRISTENSEN, ARNOLD M. "The Educational and Social Aspects of the High School Graduate," University of Iowa, Studies in Education, X (April, 1935), pp. 5-25.

The study deals with 2,125 high school graduates in 202 local communities in western Minnesota. The purpose is to gain better understanding of the post-secondary problem. Environmental, personality and antecedent factors were examined as educational influences. Further guidance and worthwhile courses for the secondary-school graduate who desires to remain in his home community were among the recommendations.

DEFFENBAUGH, W. S., AND KEESECHER, WARD W. *Compulsory School Attendance Laws and Their Administration*, Bulletin No. 4 United States Office of Education (Washington: Government Printing Office, 1935), 96 pp.

This bulletin contains a discussion of the problem of school attendance, school attendance requirements and compulsory school attendance provisions by States.

DEWEY, JOSEPH C. "A Case Study of Reading Comprehension Difficulties in American History," University of Iowa: Studies in Education, X (April, 1935), pp. 26-54.

The writer studied some 140 eighth grade students to determine the nature and limitations of comprehension in reading history. Exhaustive testing was supplemented by oral interviews. Inconsistencies show the need of caution in interpreting responses. Retention of time sequence, oral technique to enrich the understanding of the reading process, and enlarged experience for the child can be safely recommended.

GATES, ARTHUR I. *A Reading Vocabulary for the Primary Grades* as revised and enlarged (New York: Bureau of Publications, Teachers College, Columbia University, 1935), 29 pp.

This bulletin contains a list of 1811 words which have been selected as suitable for use in all forms of reading materials in grades one, two, and three.

GOODYKOONTZ, BESS, AND OTHERS. *Survey Report of the Cincinnati Public Schools* made by the U. S. Office of Education (Cincinnati: The Cincinnati Bureau of Governmental Research, 1935), 476 pp.

This survey made by the United States Office of Education contains twenty-four chapters relating to: The Plan of Survey, The School Program and Its Evaluation, The Teaching Staff, The Administration and Supervision of the Schools Program, and Business Management and Finance.

KANDEL, I. L. *The Outlook in Education:* One of the Joseph Payne lectures for 1932-1933 delivered in the University of London Institute on Education (London: Oxford University Press, 1933), 18 pp.

The author presents a survey of the educational outlook for this country and abroad in a lecture presented to the Institute of Education of the University of London.

MORRISS, MORSE, AND PHILLIPS. *An Experimental Reading Study in the Joint Library-Adult Elementary Education Field* (New York: Bureau of Publications, Teachers College, Columbia University, 1935), 44 pp.

This bulletin presents a study of satisfying reading materials for the twelve million men and women in the United States in whose lives reading does not function effectively: (1) desirable characteristics of the books needed, (2) the character and intelligence of the individual readers, (3) creating appropriate relationships between the books and the readers.

SEGEL, DAVID. "Prediction of Success in College" (Washington: The United States Department of Interior, Office of Education, Bulletin No. 15, 1934), 98 pp.

The bulletin contains a presentation of the various student measurements, their statistical treatment, and factors which influence results, for the purpose of improving the articulation between high school and college as well as the prediction of success in college. Bibliography.

SEYFRIED, JOHN E. *Principles and Mechanics of Research* (Albuquerque: University of New Mexico, July, 1935), 240 pp.

The monograph treats research from the standpoint of problems through which the college student escapes the danger of too great dependence on textbooks and develops their own initiative and resources. Research technique is explained and illustrated by classic examples from the work of Pasteur and others. Bibliography and Glossary.

SMITH, HENRY LESTER. *Some Practical Efforts to Teach Good Will* (Bloomington, Indiana: Indiana University, School of Education, September, 1935), 170 pp.

This bulletin reports a study of methods of dealing with the subject of good will in 104 educational institutions. Twenty examples are reported in some detail, showing techniques used from first grade guidance to college and university orientation. Basic concepts and suggestions are included. Bibliography.

STANTON, HAZEL MARTIN. "Measurement of Musical Talent," *Studies in the Psychology of Music*, II (Iowa City: University of Iowa, 1935), 140 pp.

In ten chapters the author treats in general and scientific manner such subjects as preliminary analysis of talent, testing, prognosis and classification of talent.

TORGERSON, T. L., AND WILDER, FLORA. *Report of the 1935 Wisconsin Achievement Testing Program* published by the School of Education and the Bureau of Records and Guidance (Madison, Wisconsin: University of Wisconsin, 1935), 14 pp.

The authors summarize the results for the 1935 Wisconsin Achievement Test in the subjects of Algebra, Geometry, General Science, Biology, American History, and Language usage.

VARON, EDITH J. *The Development of Alfred Binet's Psychology*, Psychological Monograph No. 207 (Princeton,

N. J.: Psychological Review Company, 1935), 129 pp.

The author traces the development of Alfred Binet's psychology discussing Binet as an associationist, Binet during the transitional period, individual psychology, and the invention of the scale for the measurement of intelligence and its use, and the evolution of a new system of psychology. Bibliography.

WESLEY, EDGAR B., AND OTHERS. *The Historical Approach to Methods of Teaching the Social Studies*, Fifth Yearbook of the National Council for the Social Studies (Philadelphia: McKinley Company, 1935), xi + 204 pp.

The Fifth Yearbook contains an introduction and six parts dealing with: Influence of curricular purpose on methods, influence of pedagogical scholarship on methods, influence of subject field on methods, influence of teaching aids on methods, influence of special groups on methods, and influence of evaluation on methods.

WRIGHT, EDITH A. "Courses of Study for Elementary and Secondary Schools," Office of Education, Circular No. 139 (Washington: Office of Education, United States Department of Interior, March, 1935), 46 pp.

This circular supercedes circular No. 111, and includes all state, city and county courses of study from 1930 to 1935 inclusive, which are on file in the Office of Education. The courses are classified according to subject; pertinent data, such as grade level, scope and special features, are given.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

BUTLER, FRANK A. "Prediction of Success in Practice Teaching," *Educational Administration and Supervision*, XXI (September, 1935), pp. 448-456.

The author presents a plan for the prediction of success in practice teaching with data supporting the plan.

CARROTHERS, GEORGE E. "Six-Year Trends in the Larger High Schools of Michigan," *The School Review*, XLIII (October, 1935), pp. 590-597.

The author reports data on enrollments, graduation, teachers employed, etc., in the larger high schools of Michigan.

PARSONS, RHEY BOYD. "A Study of the Relation of Supply of Teachers to Demand of Teachers," *The Elementary School Journal*, XXXVI (October, 1935), pp. 97-104.

The author presents data on the relation of supply to demand for teachers in the state of Tennessee. It appears that far more students are taking courses in education in the state of Tennessee than can expect to get jobs in Tennessee.

METHODS OF CLASSROOM INSTRUCTION

APPLEGARTH, L. W. "Methods of Recording Laboratory Notes in High-School Chemistry," *Science Education*, XIX (October, 1935), pp. 107-112.

The author presents the results of an investigation of three methods of recording laboratory notes. He finds that for the average class a written exercise designed to emphasize the important parts of an experiment is as effective as a permanent notebook.

CRAWFORD, C. C., AND MALIN, MARY ALICE. "An Experiment With Three Ways of Teaching Water-Color Painting," *The Elementary School Journal*, XXXVI (September, 1935), pp. 40-43.

The authors present the results of an experimental investigation of three meth-

ods of teaching art from which they conclude that the pencil-drawing method is probably superior to the chalk-sketching and the free-painting methods.

DUNLAP, JACK W. "Preferences as Indicators of Specific Academic Achievement," *The Journal of Educational Psychology*, XXVI (September, 1935), pp. 411-415.

The author presents data to show that the preferences of pupils may be used to predict academic achievement.

GROSSNICKLE, FOSTER E. "To Check or Not to Check," *The Elementary School Journal*, XXXVI (September, 1935), pp. 35-39.

The author presents data showing that checking in long division with a one-figure divisor is of no value for obtaining or maintaining 100 percent accuracy when the process is taught in Grade IV.

KNOWER, FRANKLIN H. "Effect of Oral Argument on Changes in Attitude," *Journal of Social Psychology*, VI (August, 1935), pp. 315-347.

From a study of 607 college students in public speaking, the author found that the sex of audience and speaker constitute more distinct variables than did logical and emotionally persuasive speeches.

LOBAN, WALKER. "Making Pupils Responsible for Self-Diagnosis," *The English Journal*, XXIV (September, 1935), pp. 571-575.

The author presents an experiment in tenth grade English in which individual diagnostic sheets including a color scheme to indicate score was used. The method was found useful in overcoming student dislike for difficulties in grammar.

PETERSON, GEORGE W., AND DOUGLASS, HARL R. "Published Workbooks Versus Pupil-Made Notebooks in Ninth-Grade General Science," *The School Review*, XLIII (October, 1935), pp. 608-613.

The authors report the results of an experimental study from which they conclude that there is little difference in the relative effectiveness of workbook and the notebook as a device for teaching general science.

WAGNER, MAZIE EARLE, AND STRABEL, EUNICE. "Teaching High-School Pupils How to Study," *The School Review*, XLIII (October, 1935), pp. 577-589.

The authors present data from several large high schools in Buffalo showing that how-to-study courses are worth-while.

WRIGHTSTONE, J. WAYNE. "Appraisal of Newer Practices in Latin Teaching," *School and Society*, XLII (August 31, 1935), pp. 302-304.

New practices recommended in the "Report of the Classical Investigation" and modifications of them were compared with the conventional method through the use of equated groups of pupils. Findings include a more objective basis for discussion of the two methods, a positive, though not significant advantage in favor of the newer methods, and enriched pupil achievement.

CURRICULUM

HARAP, HENRY. "Survey of Twenty-Eight Courses in Consumption," *The School Review*, XLIII (September, 1935), pp. 497-507.

The author has assembled data on courses offered in consumer problems. The study includes courses in this field for colleges, secondary schools and wom-

en's clubs. Fifty-six topics are classified to guide the instructor in course construction and modification.

HOCKETT, JOHN A. "Reading Interests of Z-Section Pupils," *The Elementary School Journal*, XXXVI (September, 1935), pp. 26-34.

The author presents data relative to the reading interests of Z-section pupils: number of pupils who had read each of 64 books, the percentage of those who had read the book who preferred it and the rank order of difficulty.

MATHEWS, C. O. "The Introductory Course in Educational Measurements," *Educational Administration and Supervision*, XXI (September, 1935), pp. 431-447.

The author brings together the more important findings of investigators and writers relative to the objectives and content of introductory courses in educational measurement.

CHILD WELFARE, GUIDANCE, AND DEVELOPMENT

WILLIAMSON, E. G., AND DARLEY, J. G. "Trends in the Occupational Choices of High-School Seniors," *The Journal of Applied Psychology*, XIX (August, 1935), pp. 361-370.

The authors present data on the vocational choices of high school seniors. It is apparent that occupational trends and vocational information are not disseminated on a sufficiently wide basis to influence the choice of high school students.

MEASUREMENTS, STATISTICS, AND METHODS OF EDUCATIONAL RESEARCH

DAVIS, IRA C. "The Measurement of Scientific Attitudes," *Science Education*, XIX (October, 1935), pp. 117-122.

The author presents a discussion of the construction and use of a test of scientific attitudes.

JORDAN, R. C. "An Empirical Study of the Reliability Coefficient," *The Journal of Educational Psychology*, XXVI (September, 1935), pp. 416-426.

The author presents data which seems to indicate that the coefficient of reliability secured from the correlation of even items with odd items probably gives a truer measure of reliability than coefficients secured from correlating the scores made on duplicate forms.

ROSANDER, A. C. "A Quantitative Study of Social Attitudes," *The School Review*, XLIII (October, 1935), pp. 614-620.

The author reports the results of a study of constitution attitude scale administratives to 148 high school students at the University of Chicago. The author thinks that the influence of political science courses on attitudes are greatly overestimated.

TRAXLER, ARTHUR E., AND ANDERSON, HAROLD A. "The Reliability of an Essay Test in English," *The School Review*, XLIII (September, 1935), pp. 534-539.

The authors studied 106 high school students to determine the reliability in scoring an essay examination and pupil performance. According to the procedure employed, reliability for reading by experienced readers was high, while reliability for student performance was relatively low.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Annual List of Doctors' Theses Under Way.—The sixth annual compilation of Doctors' dissertations in progress will appear in the January number of the *Journal of Educational Research*. The institutions reported in April, 1934, by the Committee on Graduate Instruction of the American Council on Education as granting the Doctor's degree in education were: American University, Boston College, Boston University, Bryn Mawr, Catholic University, Clark, Columbia, Cornell, Drew, Duke, Fordham, George Peabody, George Washington, Harvard, Indiana, Johns Hopkins, Marquette, Michigan State, New York, Northwestern, Notre Dame, Ohio State, Pennsylvania State, Rutgers, Saint Bonaventure's, Saint Louis, Stanford, State College of Washington, Syracuse, Arizona, Buffalo, California, Chicago, Cincinnati, Colorado, Illinois, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, Pittsburgh, Southern California, South Carolina, Texas, Virginia, Washington, Wisconsin, Temple, Washington, Western Reserve, West Virginia, Yale, and Colorado State Teachers College. Even though the Committee considered only thirty of these institutions adequately equipped and staffed to grant the Doctor's degree in education, in the interest of completeness the reader is urged to report to the editor of this department any additional schools offering a doctorate program in education.

Doctoral Dissertations Accepted.—The second annual list of doctoral dissertations accepted by American universities, 1934-1935, compiled for the National Research Council and the American Council of Learned Societies, by the Association of Research Libraries, with Donald B. Gilchrist as editor, has been published by the H. W. Wilson Co. No list of similar scope has previously appeared for American dissertations, although complete lists for French and German university dissertations have been published annually for many years. Of the many dissertations accepted each year, only about one-third ever appear in print, although universities now make it an almost universal practice to file full manuscript theses in duplicate, and render copies available through interlibrary loan. For such reasons this publication is a necessary one.

In form, the list is very similar to, and continues, the annual list in the field of science, issued since 1920 by the National Research Council. Its scope has been broadened to cover all fields of study; and that there may be no break in the statistical record, the dissertations in the field of science have been classified in the same subject groups used in the Council series, those for other fields being selected on much the same basis.

For greater convenience, the list has been arranged in seven main divisions: philosophy, religion, earth sciences, biological sciences, social sciences, literature, and art. While the arrangement is an

arbitrary one, it follows in a general way the organization of American universities into divisions and departments, and the finding of material is further facilitated by a general subject cross-index and an author index. When theses appear in print, mention of this fact is made also.

Each annual number contains, as supplementary material, records of previous theses lists, annual lists of doctoral dissertations in progress, statistical tables showing doctorates in science according to subject, and distribution of doctorates by university by subject. There is also a table showing the present practice in all universities whose theses are listed, with respect to the publication and lending of their dissertations.

Bibliography of Bibliographies. — A Catalogue of bibliographies and summaries in education is to be published by the H. W. Wilson Company early in 1936. The compilers are Walter S. Monroe, Director of the Bureau of Educational Research of the University of Illinois, and Louis Shores, Director of the Library School, George Peabody College for Teachers.

While many points regarding the final selection of materials and arrangement under subjects remain to be decided, the work already accomplished by the compilers indicates that this will be a substantial list, totaling from 3000 to 4000 entries. Compilation will include bibliographies and summaries down to June 30, 1935, beyond which point it is expected that the list will be kept up to date by the *Education Index*. The list, when finally published, will be accompanied by a survey of the field of educational literature, a list of sources, and very likely, an author index.

Courses of Study. — Convenient and valuable information is available concerning existing courses of study. Circular No. 139, March, 1935, of the U. S. Office of Education is a *List of Courses of Study for Elementary and Secondary Schools, 1930-1935*, compiled by Edith A. Wright. The circular includes all state, city, and county courses of study from 1930 to 1935 inclusive, on file in the library of the Office. Parallel columns give the school system, subject, year, grades, and pages involved. A subject index is provided.

H. B. Bruner has published selected lists of recent courses of study in the *Society for Curriculum Study News Bulletin* (now *Curriculum Journal*), November 27, 1933, and January 15, 1935.

Henry Harap has published analytical surveys and critiques of recent courses of study in the *Journal of Educational Research*, February, 1930; September and October, 1932; and May, 1935.

Attendance Laws. — Bulletin No. 4, 1935, of the Office of Education by W. S. Deffenbaugh and W. W. Keesecker, is the most complete and recent source of information available concerning compulsory school attendance laws and their administration. The various states as of January 1, 1935, had compulsory school attendance in effect between the ages listed below: Alabama, 7-16; Arizona, 8-16; Arkansas, 7-16; California, 8-16; Colorado, 8-16; Connecticut, 7-16; Delaware, 7-17 (7-16 in Wilmington city); District of Columbia, 7-16; Florida, 7-16; Georgia, 8-14; Idaho, 8-18; Illinois, 7-16; Indiana, 7-16; Iowa, 7-16; Kansas, 7-16; Kentucky, 7-16; Louisiana, 7-14; Maine, 7-17; Maryland, 7-16; Massachusetts, 7-16; Michigan, 7-16; Minnesota, 8-16; Mississippi, 7-17; Missouri, 7-16; Montana, 8-16; Nebraska, 7-16; Nevada, 7-18; New Hampshire, 8-16; New Jersey, 7-16; New Mexico, 6-17; New York, 7-16 in all districts, until 17 where continua-

tion schools are provided; North Carolina, 7-14; North Dakota, 7-17; Ohio, 6-18; Oklahoma, 8-18; Oregon, 8-16; Pennsylvania, 8-16; Rhode Island, 7-16; South Carolina, 8-14; South Dakota, 8-17; Tennessee, 7-16; Texas, 8-14; (7-16 after May 6, 1935); Utah, 8-18; Vermont, 8-16; Virginia, 7-15; Washington, 8-16; West Virginia, 7-16; Wisconsin, 7-16; and Wyoming, 7-17.

Carnegie Centennial. — Announcement of the program of the Andrew Carnegie Centennial Celebration, which will be held on November 25, 26 and 27 in New York, Pittsburgh, Washington and other cities and communities throughout the country, has been made by F. P. Keppel, President of the Carnegie Corporation of New York, the largest of the six Carnegie foundations in the United States.

Andrew Carnegie was born November 25, 1835, in a weaver's cottage in Dunfermline, Scotland, the ancient Caledonian capital from which his family emigrated to America in 1848. It was in Dunfermline that Carnegie built his first library and began in 1881 his series of library benefactions that continued until 1917, by which time he had built 1,946 free public libraries in the United States and 865 in other parts of the English speaking world. In his lifetime Carnegie gave away in benefactions $350,000,000.

The different Carnegie trusts in this country which will participate in the centennial celebration, in the order of their establishment, are:

Carnegie Institute of Pittsburgh, 1896, which conducts an institute of technology, a museum of fine arts, a music hall, a museum of natural history, a public library, and a library school.

Carnegie Institution of Washington, 1902, devoted to scientific research.

Carnegie Hero Fund Commission, 1904, to recognize heroic acts performed in the peaceful walks of life.

The Carnegie Foundation for the Advancement of Teaching, 1905, to provide retiring pensions for teachers and to advance higher education.

The Carnegie Endowment for International Peace, 1910, to serve the purpose indicated by its name.

Carnegie Corporation of New York, 1911, for the advancement and diffusion of knowledge and understanding among the people of the United States, and the British Dominions and Colonies.

The Carnegie Corporation has issued a 44 page booklet on *The Benefactions of Andrew Carnegie*, by Burton J. Hendrick.

Inglis Lecture for 1936.—The Inglis lecturer for 1936 at Harvard University will be John L. Tildsley, assistant superintendent of schools, New York City. It is the hope of the committee that last year's address by Samuel S. Drury of St. Paul's School and the forthcoming lecture will be of general interest, not merely in themselves, but in relation to each other, as representing the contrasting points of view of recognized leaders in the practical administration of private and of public secondary schools. The title of the lecture is, "The Mounting Waste of the American Secondary School."

Australian Research.—The sixth annual meeting of the Australian Council for Educational Research was held in Melbourne on August 23-26. The report presented by the executive officer, K. S. Cunningham, showed that in the five and a half years since the inception of the Council approval has been given to 113 investigations at a total cost of 12,558 pounds. Of these investigations 49 have been completed, 46 are in progress, 12 have not yet been commenced, and 6 have been discontinued. Including reports at present in the press the Council has forty publications to its credit. Many of these have attracted considerable interest. The

total sales of publications amount to approximately 3,400. Among the inquiries which it was agreed to extend or which were approved for the first time were the following: the value of school broadcasts, the possibility of providing for proper courses in physical education, the employment of leisure, and a study of the absorptive capacity of occupations in New South Wales.

It was reported that good progress has been made in the plans for applying an intelligence test to a large sample of children in all States toward the end of this year. Up to the present there has been no test of this kind which has had more than a local application. The test which it is proposed to standardize is the Otis Self-Administering Test. In addition to this well-known American test, a non-verbal test (i.e., one involving the use of pictures and diagrams rather than words) has been worked out at the headquarters of the Council. The provision of tests of this kind with adequate Australian norms will fill a long-felt need. The present discussion throughout the world of the problem of examinations is showing more clearly than ever that it is desirable to obtain as much evidence as possible on the native ability of children as a guide to their future educational and vocational careers. It is confidently anticipated that the teachers in the schools which happen to be selected for applying these tests, so as to establish standards, will give their full coöperation in what will be, perhaps, the most important educational project of a scientific kind yet attempted in Australia. In addition to the intelligence test, the Council proposes to apply spelling tests to selected schools so that tests in this subject may be added to those which already exist in arithmetic and reading.

The Council has recently published *Adult Education in America and England*, by B. H. Molesworth, and *Imagination in Early Childhood*, by Ruth Griffiths.

Committee on Education and Government.—The Committee on Education and Government of the American Council on Education during the past year has been concerned with a series of researches bearing upon the relative and absolute ability of the various states to finance public education and the effort which would be required of the various states to pay for a minimum program. A detailed estimate is being made for each state of the amount of revenue which would be raised by a modern diversified system of taxes operating at reasonable and uniform rates. This tax system in general involves the recommendation of the Model Tax Plan.[1] The result of this investigation, along with the more exact measures of educational need which have been developed by Mort,[2] will provide more significant data as to the relative and absolute ability of the states to support education than have been available previously.

One phase of the investigation will shortly be available in printed form.[3] Certain of the findings can be reported at this time. In general the data are in agreement with those of previous studies of the relative ability of the states.[4] They indicate differences in the ability of the states to support education, at the ex-

[1] *Second Report on a Plan of a Model System of State and Local Taxation*, National Tax Association, 1933.

[2] Mort, Paul R. "An Objective-Basis for the Distribution of Federal Support to Public Education," *Teachers College Record*, November, 1934.

[3] Chism, Leslie L. *The Economic Ability of the States*: Being a Study of the Ability of the Various States to Raise Tax Revenue Under a Plan of Taxation Based on the Model Plan of State and Local Taxation, with Special Reference to the Relative Ability of the States to Support Education.

[4] Norton, John K. *The Ability of the States to Support Education*. National Education Association, Washington, D. C., 1926.

tremes, of six and nine to one, varying according to the measure used for the educative task to be done. The percentage of the total tax revenue possible through the application of a modern system of taxation, which it would be necessary for the states to allocate for the support of education, varies markedly. In some states it would be necessary for one hundred percent of the tax revenue which could be raised by a modern system to be expended for education in order to finance an educational program, at a cost per unit of educational need, equal to the average for the country as a whole. Corresponding percentages in some states are below twenty. The average percentage of tax revenue, state and local, allocated to school support in the 1920's was 31.

The chairman of the Committee is John K. Norton of Teachers College, Columbia University, who prepared this statement.

Coöperation with the Education and Law Conference.—The committee appointed by the American Council on Education in acceptance of Senator Copeland's invitation has always regarded its task to be that defined in the invitation, namely, to stimulate schools and colleges so to reconstruct their practices that schooling continually evolves in the direction indicated by the report of the U. S. Senate Sub-Committee on Racketeering and Crime. To this end, the committee planned four projects, concerned with the academic practices and student-employment techniques of schools and colleges.

The first document issued, called "The Copeland Experiment in the District of Columbia," by W. W. Charters, appeared in the *Educational Record* for October, 1934. This describes the "clinical method" in school practice and details the program planned to promote evolution of clinical techniques by experiments in the public schools controlled coöperatively by Congress and the court-appointed Board of Education in the District of Columbia.

A second report, prepared under supervision of the committee, was issued in September, 1934, as a special pamphlet called "Federal Student Aid." This contains a list of 1400 jobs which offer opportunities for college students in the District of Columbia to get educationally valuable experience as well as financial support for their labors. This was used effectively by six local colleges in evolving better clinical techniques in college practices with regard to socially valuable activities. This pamphlet was widely distributed for the information and guidance of all concerned.

A third document, called "Federal Aid to College Students," was printed in the *Educational Record* for October, 1934. The title of this report proved unfortunate, because the words "Federal Aid" carry political and financial implications that are inconsistent with scientific experimentation in education. The text of the document makes it perfectly clear that the work of the committee is aimed solely at helping colleges devise their own appropriate ways of grasping local opportunities to get results that are both socially valuable to the community and educationally valuable to youth.

As a basis for the fourth document undertaken by this committee, many current data were collected on medical, recreational, vocational, and welfare activities. Completion of this report last fall was temporarily stopped by unavoidable events. When its completion, on the plan agreed upon, was resumed, the economic and political situation had changed so materially that it seemed wise to wait until more stable conditions return. The collected materials are available for use

when needed either by this committee or by the newly established Youth Commission of the Council. The completion of this bulletin on "Creating New Constructive Employment for Students" is now needed to clear up the current malpractice in schools and colleges, and to foster the evolution of clinical techniques that help children better to develop into men and women.

A report on the results of the clinical experiments in the Washington schools was presented to the local Board of Education by Superintendent Ballou last June. This was considered too condensed and too technical for presentation to the public then. The Board instead instructed the school officials to present one of a series of sectional reports to the Board at each bi-weekly meeting. Members of this committee are coöperating closely with school officials in doing this. When presented, each section of the report will be given at once to the press. During the next few months the public will thus receive reliable facts concerning what is being done to its children in the lower schools.

On the college level, in response to a personal invitation from Senator Copeland, the George Washington University in the District of Columbia has organized ten graduate seminars for part-time university training of those who are teaching in local schools and who desire to get higher degrees in education. This university requires specific courses of such graduate students only so far as is necessary to assure the faculty that the student has qualifications needed to do creative work. The members of these seminars will do their creative work in their own class rooms with their pupils, but under supervision of staff members at the University. This arrangement offers a way to revive the one-time fruitful relationships between master and apprentice. Similarly, in Michigan, the University and several teacher-training institutions have been organized in coöperation with the Council committee. Negotiations have also been opened with the University of Iowa and the State Superintendent of Schools of Utah with a view of extending the field to schools and colleges in those states.

From the foregoing statements it is clear that the work of this committee, as requested by the Education and Law Conference, is certain to increase both in amount and in fundamental importance to the American people. For the past one hundred and fifty years all court decisions in all states show that the public is legally justified in supporting schools that really help all young people acquire the "intelligence and sterling moral character" needed to maintain enduring free institutions. But the U. S. Senate Sub-Committee on Racketeering and Crime shows that outlaws exact from us each year tribute of fifteen billion dollars,—half of our present national debt. Evidently, neither the outlaws nor the rest of the people possess the "intelligence and sterling moral character" that schools should help them develop.

Herein lies the eternal challenge to the schools. The experiments under this committee are trying to reconstruct and reorganize schools so that they get the results specified by the court decisions and thus help "provide for the common defense and general welfare" of a people struggling to "form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity."

The chairman of the Committee is C. R. Mann of the American Council on Education, who prepared this report.

Orientation of Secondary Education.—Three years ago the National Department of Secondary School Principals appointed under the chairmanship of Thomas H. Briggs of Teachers College, Columbia University, a Committee on the Orientation of Secondary Education. Since its appointment this Committee has been using a technique that is somewhat unusual. Under a grant from the Carnegie Foundation for the Advancement of Teaching it has been able to assemble its members twice a year for periods of a full week to work in some comfortable place remote from distractions. After the discussions at these meetings, assignments have been made to individual members who assumed responsibility for writing up parts of the report.

The Committee undertook first to formulate the issues, that is, the conflicts between theory and theory, or between theory and practice, that exist in secondary education today; to present the argument as fairly as possible for each alternative; and to throw the weight of its influence in the direction that promises the best results in the light of democratic ideals. In the fall of 1934 the Committee printed, but did not publish, an edition of 1500 copies of a tentative report which it circulated to some seventy groups of secondary school people organized in various parts of the United States to consider the presentation and to make criticisms. These criticisms have all been considered by the Committee, and it will present its final report on the issues at the February meeting of the Department at St. Louis.

The Committee has also undertaken to define what seem to it to be the special functions of secondary education. Its report on this phase of the work will be published somewhat later.

Committee on Standards.—The American Council on Education acted, first in 1921 and then definitely by resolutions in May, 1924, to set up standards and principles of accrediting recommended by the Committee on Standards of which George F. Zook was then chairman. It seems appropriate, therefore, that any action concerning withdrawal of the standards should come from the Council itself. At the meeting of the Committee on Standards, held in Washington on April 15, 1935, all members of the Committee joined Dr. Zook in the conviction that the principles and standards as set forth in 1924 are now obsolete and should no longer be printed, as they have been, in the annual compilation and publication by the Council of the approved list of institutions of higher education and in the Handbook prepared by the Council. The Committee on Standards voted an expression of sympathetic interest in the total pattern-map plan of the North Central Association of Colleges and Secondary Schools. The Committee recommended that for the present there shall be no publication at all of approved standards of accrediting higher institutions. This recommendation was adopted by the Council. The chairman of the Committee on Standards is President Raymond Walters of the University of Cincinnati.

Coöperative Study of Secondary-School Standards.—Marked progress has been made during the past year by the coöperative committee representing the six regional associations of colleges and secondary schools of the United States, organized in 1933, which is attempting to develop improvements in the methods and standards of accreditation for the secondary schools of the country.

Substantial financial support has been secured from one of the national educa

tional foundations; a central office has been opened in Washington, D. C., in association with the American Council on Education; the Executive Committee of the study recently devoted a week of meetings and intensive study to the problems involved; and over two thousand research studies in secondary education have been abstracted to secure a sound basis for improved standards.

The Washington headquarters, opened in September, are in charge of Walter Crosby Eells, who has been granted leave of absence from his work at Stanford University to act as Coördinator of Research for the national study. He will be assisted by M. L. Alstetter of George Peabody College for Teachers.

A General Committee of twenty-one members representing the six regional associations, with five advisory members, is in charge of the study. The Executive Committee consists of the following: New England Association, Jesse B. Davis, Boston University; Middle States Association, E. D. Grizzell, University of Pennsylvania, and Richard M. Gummere, Chairman, Committee on Admissions, Harvard University, (formerly headmaster of William Penn Charter School, Philadelphia); Southern Association, J. Henry Highsmith, North Carolina State Department of Education, and Joseph Roemer, George Peabody College; North Central Association, George E. Carrothers, University of Michigan, and J. T. Giles, Wisconsin State Department of Education; Northwest Association, Henry M. Hart, Lewis and Clarke High School, Spokane; and Western Association, William M. Proctor, Stanford University.

Over 2500 abstracts of significant research studies in the secondary education field have been made during the past year, under the direction of the Executive Committee, with the coöperation of fourteen specialists in several leading schools of education in different parts of the country. These abstracts have been used as the basis for tentative checklists of several hundred features judged to be characteristic of satisfactory or superior secondary schools.

Members of the Executive Committee and the Washington research staff spent a week together at Montreal, North Carolina, in September studying and revising these tentative checklists, preparing statements of guiding principles, studying desirable procedures, and outlining plans for the promotion of the study during the current year.

The research staff is now engaged in revision of the material which will be submitted before Christmas to two or three hundred secondary-school principals and other leaders in the field of secondary-education for criticism and suggestion. It is expected that before the year is over a body of material will be developed which will be sufficiently satisfactory to warrant experimental try-out in several hundred representative secondary schools, both public and private, throughout the United States.

It is not intended that uniform standards will be applied in all parts of the country, but that flexibility will be promoted, not only in different sections but also among different schools in the same state or section. Schools will not be expected to conform to any one pattern, but will be encouraged to develop progressively better ways of attaining the objectives which they set for themselves. It is the earnest hope of the Committee to develop methods of identifying good secondary schools which will not only be more flexible than those now in use, but also will emphasize the quality of the educational process and the nature of the resultant product, rather than the ma-

chinery of the educational system, and which will be a constant stimulus to continual improvement.

The General Committee of Twenty-one will hold a two-day meeting during the week preceding that of the Department of Superintendence of the National Education Association at St. Louis in February.

National Study of Youth.—An American Youth Commission has been organized by the American Council on Education to sponsor a comprehensive study of problems in the care and education of American youth, with a substantial grant ($800,000 for a five-year period) from the General Education Board. The Commission consists of Will W. Alexander, Newton D. Baker, Ralph Budd, Lotus D. Coffman, Dorothy Canfield Fisher, Willard E. Givens, Henry I. Harriman, Robert M. Hutchins, Chester H. Rowell, William F. Russell, Edith R. Stern, John W. Studebaker, Miriam Van Waters, and Matthew Woll. The first meeting of the Commission was held at Washington on September 16. H. P. Rainey, president of Bucknell University, was selected as full-time director of the staff which will conduct this important investigation.

Details concerning plans for the study will be given in a later issue of this department.

Surveys of Higher Education.—The extensive analysis and appraisal of 230 published surveys of higher education completed last year by Walter Crosby Eells of Stanford University, under a grant from the Carnegie Corporation, is being published this fall by the Carnegie Foundation for the Advancement of Teaching. In addition to a history of higher educational surveys and an analysis of the contents, personnel, techniques, etc., the most note-worthy feature is a study of the success of the different surveys.

First, an extensive quantitative study was made of the extent to which approximately 5,000 specific recommendations found in the published reports have been actually carried out in practice, either in whole or in part, as reported by the presidents of the institutions concerned; second, an independent qualitative evaluation of the different surveys was made by a group of men judged most competent to render critical estimates of their value; third, a comparison of the two methods of evaluation was made, showing a high degree of consistency in results; and fourth, evidence was assembled regarding a group of more general and intangible results.

A summary of one phase of the study is reported in the proceedings of the 1935 meeting of the American Educational Research Association, entitled *The Application of Research Findings to Current Educational Practices.* A summary of the results of surveys of higher education for Negroes is found in the October issue of the *Journal of Negro Education.* A study of the results of the two national surveys of the colleges of the Lutheran and Methodist churches will appear in an early issue of *Christian Education.*

The Effective and the Ineffective College Teacher.—A study made for the National Personnel Service, Inc., under joint subsidy from that organization and the Carnegie Corporation of New York has been published by the American Book Company.[1]

The major purpose of the study was to secure through the administrative eye a picture of the representative effective and ineffective teacher as each traveled along the educational highway from entry on

[1] Anna Y. Reed, in collaboration with Frank P. Maguire, William A. Thomson, and Harriet Van der Vate, 1935.

academic career to maturity; to secure, also, a series of pictures depicting the representative administrator as he selects those whose ultimate successes or failures are intimately bound up with his own achievements and reputation; to go with him as he watches over his corps and evaluates each contributor; to note what methods he favors for the improvement of the one type of instructor and for the upkeep of the other; and finally to be with him when he reviews his achievements in faculty building and takes stock of his present assets and liabilities in terms of teaching effectiveness.

The findings were based upon data secured from two questionnaires replied to by 291 liberal arts college and 115 teachers college administrators. Administrative opinion regarding selection, evaluation, and efficiency of college teachers was supplemented by concrete data relative to 969 individual teachers selected by these same administrators as outstandingly good and 208 designated as "rusty" or hopelessly ineffective.

Considerable inter- and intra-group agreement was revealed; e. g., a core of basic requirements for successful teaching with a definite supply and demand relationship was found. Both groups were interested in scholarship *plus* teaching techniques and both are waiting for tangible evidence, expressed in terms of personalities better adapted to teaching, greater ability to motivate students, better organization of subject matter, better prepared daily class work, greater ability to profit by constructive criticism and greater ability to go ahead under their own steam; it was considered that either or both the professional and graduate school are functioning as satisfactory preparatory institutions. The "rusty" teacher was a more serious problem for both than was the inexperienced. Both reported 90 percent of their faculties passable, good, or excellent and 10 percent rusty, ineffective, or undesirable. Classification of verbatim statements characterizing effective teachers indicates that administrative officers tend to think of the successful teacher in terms of well chosen, well organized, clearly presented subject matter accompanied by ability to meet students on their own level, to inspire them to do their own thinking and to pursue their quest for knowledge beyond course and degree requirements. Some of the significant statements concerning the effective teacher are:

Students never fail when building on his foundation; stimulates intellectual interest; secures intrinsic motivation; challenges student thinking; causes even poor students to learn; inspiration to students for over half a century; worth while work of students stimulated into creative work; an objective student counselor; students have great respect for him; permits no "shoddy" thinking; marked ability to teach.

On the other hand, the administrative officer tends to picture the ineffective teacher as an emotionally unbalanced, temperamental, erratic individual who has failed to keep up in his subject, is unable to formulate a message and put it across, or to secure any worth while coöperation from the students; e. g.:

Offers no incentive to his students; dead but not buried; low native ability; about as inspirational as a crawfish; a regular old tabby; depending on tenure; hasn't had a new idea for years; suspicious of his colleagues; seems to have gone to seed; travels in his ruts; sloppy; no initiative; muddled speaker and thinker; just potters around; great gossip; spiritual qualities lacking; does not command confidence of students; does not realize education has any modern techniques.

The study reveals to each administrator the consensus of opinion of his conferees on a wide range of topics. It affords a background upon which each may inven-

tory his own faculty assets and liabilities, and determine his own share of the responsibility for what he finds. It gives members of college faculties an unusual insight into the administrative mind, enables each to allocate himself to the effective or the ineffective group. Prospective college teachers and instructors preparing such teachers may gain from this report a very definite idea of the essential qualifications for college teaching and the major characteristics which administrative officers consider as differentiating the effective from the ineffective teacher.

This department is indebted to Anna Y. Reed of New York University for the above statement.

Pennsylvania Projects.—The following research projects are in progress or were completed during the past year at State Teachers College, Indiana, Pennsylvania, as reported by R. B. Beard and Richard Madden:

1. A study of the data of the members of the entering class in 1932, including test results, high school rank, age at high school graduation, interviewer's report, high school principal's report, occupational status of parents, marital status of parents, sex, size of high school graduating class, type of elementary school attended, personality ratings by teachers, and marks given by the same teachers.

2. A study of the relation of marks received by students in their major fields, student teaching marks, English marks, psychological examination, and school marks earned.

3. A study of the reliability of the aptitude test and the English test given to candidates for admission in 1932 and 1933 who were in the lower half of their high school graduating class.

4. A prediction study using the data of the foregoing study and high school rank.

5. A comparative study of the Minnesota Aptitude and the American Council Psychological Examination for predicting scholastic success.

6. Study of the students who failed in mathematics and of those who failed in their first semester's work in English in relation to the psychological examination, school marks earned, and student teaching marks.

7. Study of the elimination of students over a four year period in relation to their rank on the psychological examination.

8. Study of the student teachers in the primary and intermediate curricula who had their practice teaching the first semester of their second year, in relation to marks in English, psychology, and education; scores in psychological examination and English tests; school marks earned; rating on Allport's A-S Reaction Study and Laird's C-2 Inventory; and the interviewer's report.

9. Study of the validity of the Metropolitan Reading Readiness test.

10. A study of the relationship of hearing as measured by the audiometer to intelligence, quality points, and personality rating for the entire student body.

11. The value of items on the entrance application blanks was determined with reference to the mark in student teaching.

12. A study of the reliability and validity of the pre-entrance personal interview.

13. A survey of the occupational trends of Indiana County.